[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 119, 121, 129, 135, and 183

[Docket No. FAA-1999-5401; Notice No. 99-02]

RIN 2120-AE42

Aging Airplane Safety

AGENCY: Federal Aviation Administration(FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM) and withdrawal of prior proposed rulemaking.

SUMMARY: The FAA proposes to require all airplanes operated under part 121 of Title 14, Code of Federal Regulations (14 CFR), all U.S.-registered multiengine airplanes operated under 14 CFR part 129, and all multiengine airplanes used in scheduled operations under 14 CFR part 135 to undergo records reviews and inspections by the Administrator after their 14th year in service to ensure that the maintenance of these airplanes' age-sensitive parts and components has been adequate and timely. The FAA also proposes to permit certain representatives of the Administrator to conduct these inspections. The proposed rule also would prohibit operation of these airplanes after specified deadlines unless damage-tolerance-based inspections and procedures are included in their maintenance or inspection program.

This proposal represents a critical step toward compliance with the Aging Aircraft Safety Act of 1991. It would help ensure the continuing airworthiness of aging airplanes operating in air transportation by applying modern damage-tolerance analysis and inspection techniques to older airplane structures that were certificated before such techniques were available, and through mandatory aging aircraft records reviews and inspections to be performed by the Administrator.

The Aging Airplane Safety NPRM published on October 5, 1993 (58FR51944) is withdrawn.

DATES: Comments must be received on or before August 2, 1999.

ADDRESSES: Comments on this proposed rulemaking should be mailed or delivered, in triplicate, to: U.S. Department of Transportation Dockets, Docket No. FAA-1999-5401, 400 Seventh St. SW., Room Plaza 401, Washington, DC 20590. Comments also may be submitted electronically to the following Internet address: 9-NPRM-CMTS@faa.gov. Comments may be filed and/or examined in Room Plaza 401, between 10:00 a.m. and 5:00 p.m. weekdays except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Frederick Sobeck, Aircraft Maintenance Division (AFS-300), Flight Standards Service, Federal Aviation Administration, 800 Independence

Avenue SW., Washington, DC 20591, telephone (202) 267-7355.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in the making of the proposed rule by submitting such written data, views, or arguments as they desire. Comments relating to the environmental, energy, federalism, or economic impact that might result from adopting the proposals in this notice also are invited. Substantive comments should be accompanied by cost estimates. Comments must identify the regulatory docket or notice number and be submitted in triplicate to the Rules Docket address specified above.

All comments received, as well as a report summarizing each substantive public contact with FAA personnel on this rulemaking, will be filed in the docket. The docket is available for public inspection before and after the comment closing date.

All comments received on or before the closing date will be considered by the Administrator before taking action on this proposed rulemaking. Late-filed comments will be considered to the extent practicable. The proposals contained in this notice may be changed in light of the comments received.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must include a pre-addressed, stamped postcard with those comments on which the following statement is made: "Comments to Docket No. FAA-1999-5401." The postcard will be date stamped and mailed to the commenter.

Availability of NPRMs

Using a modem and suitable communications software, an electronic copy of this document may be downloaded from the FAA regulations section of the FedWorld electronic bulletin board service (telephone: (703) 321-3339), the Federal Register's electronic bulletin board service (telephone: (202) 512-1661), or the FAA's Aviation Rulemaking Advisory Committee Bulletin Board service (telephone: (202) 267-5948).

Internet users may reach the FAA's web page at http://www.faa.gov/avr/arm/nprm/nprm.htm or the Government Printing Office's webpage at http://www.access.gpo.gov/nara for access to recently published rulemaking documents.

Any person may obtain a copy of this NPRM by submitting a request to the Federal Aviation Administration, Office of Rulemaking, ARM-1, 800 Independence Avenue SW., Washington, DC 20591, or by calling (202) 267-9680. Communications must identify the notice number or docket number of this NPRM.

Persons interested in being placed on the mailing list for future NPRMs should request from the above office a copy of Advisory Circular No. 11-2A, Notice of Proposed Rulemaking Distribution System, which describes the application procedure.

Background

Statutory Requirement

In October 1991, Congress enacted Title IV of Public Law 102-143, the "Aging Aircraft Safety Act of 1991" (AASA), to address aging aircraft concerns. The AASA was subsequently codified as section 447717 of Title 49, Unites States Code (49 U.S.C.).

Section 44717 of 49 U.S.C. instructs the Administrator to "prescribe regulations that ensure the continuing airworthiness of aging aircraft." That section also requires the Administrator to "make inspections, and review the maintenance and other records, of each aircraft an air carrier uses to provide air transportation." The records reviews and inspections would be those necessary to "enable the Administrator to decide whether the

aircraft is in safe condition and maintained properly for operation in air transportation." Section 44717 of 49 U.S.C. specifies that these inspections and reviews must be carried out as part of each aircraft's heavy maintenance check conducted "after the 14th year in which the aircraft has been in service." It also states that the air carrier must "demonstrate to the Administrator, as part of the inspection, that maintenance of the aircraft's age-sensitive parts and components has been adequate and timely enough to ensure the highest degree of safety."

Section 44717 of 49 U.S.C. further states that the rule issued by the Administrator must require an air carrier to make its aircraft, as well as any records about the aircraft that the Administrator may require to carry out the review, available for inspection as necessary to comply with the rule. It also states that the Administrator must establish procedures to be followed for carrying out such an inspection.

Aging Airplane Safety Notice of Proposed Rulemaking, 1993

On October 5, 1993, the FAA published Notice No. 93-14, "Aging Airplane Safety" (58 FR 51944). The proposals contained in that notice would have required operator certification of aging airplane maintenance actions and would have established a framework for the Administrator to impose operational limits on certain airplanes. Once an airplane reached those limits, additional maintenance

actions would be necessary, such as inspections or parts replacements, for the airplane to continue operating. Operational limits would have been established in a separate rulemaking.

Other specific proposals related to operator certification of aging airplane maintenance actions were included in the notice. Those proposals included: (1) a definition of the terms "heavy maintenance check" (HMC) and "years in service"; (2) a requirement for certificate holders to establish an HMC interval for each airplane they operate; (3) a requirement for certificate holders to make a maintenance record at the start of each airplane's 15th year in service and at all subsequent HMCs to certify that the airplane met all maintenance program requirements; and (4) a requirement for certificate holders to notify the FAA at least 30 days before the start of an airplane's HMC.

A number of commenters objected to certain provisions contained in the notice. Many commenters indicated that current rules already enable the Administrator to determine that an aircraft meets all maintenance program requirements; therefore, they asserted that additional rulemaking was unnecessary. Several commenters opposed the required 30-day notice proposal because the current regulations provide the FAA with sufficient means to determine the date of an aircraft's next required

inspection. Several commenters also were concerned that the definition of "heavy maintenance check" was too broad.

A number of commenters opposed the concept of an operational limit unless the FAA specified the requirements used to establish and extend those limits. Finally, some commenters suggested that the FAA exclude airplanes already having damage-tolerance-based supplemental inspection programs (SIPs) from the operational limit requirement.

Withdrawal of Notice

After further review, and taking into consideration public comments, the Aging Airplane Safety NPRM, Notice No. 93-14 (58FR51944, October 5, 1993) is hereby withdrawn.

General Discussion

Historical Perspective

The continued airworthiness of aircraft structure is significantly affected by age-related fatigue damage. Evidence to date suggests that when all critical structure are included, damage-tolerance-based inspections and procedures provide the best approach to address aircraft fatigue.

An underlying principle of damage tolerance is that the initiation and growth of structural fatigue damage can be anticipated with sufficient precision to allow damage-tolerance-based inspections and procedures to detect

damage before it reaches a size that affects an airplane's airworthiness. When damage is discovered, airworthiness is maintained by repairing the airplane before further flight.

Early fatigue requirements, such as "fail-safe" regulations, did not provide for timely inspection of an aircraft's critical structure to ensure that damaged or failed components could be dependably identified and then repaired or replaced before a hazardous condition developed. In 1978, the damage-tolerance concept was adopted for transport category airplanes as an amendment to 14 CFR § 25.571 by Amendment No. 25-45 (43 FR 46238). That amended rule required damage-tolerance analysis as part of the type design of transport category airplanes for which application was received after October 5, 1978. On May 6, 1981, the FAA published Advisory Circular (AC) 91-56, "Supplemental Structural Inspection Program for Large Transport Category Airplanes," guidance material based on the amended rule for existing designs. Using the guidance provided in AC 91-56, many manufacturers of large transport category airplanes (airplanes of more than 75,000 pounds) developed SIPs for their existing models.

Beginning in 1984, the FAA issued a series of airworthiness directives (ADs) requiring the operators of those airplanes to incorporate the SIPs into their

maintenance programs. SIPs provide inspections and procedures that are based on damage-tolerance principles.

On August 6, 1993, the FAA revised the airworthiness standards for small metallic airplanes to incorporate Amendment No. 23-45 (58 FR 42163) into 14 CFR part 23. Those revisions provided an option to use damage-tolerance-based inspections and procedures as a means for achieving continued airworthiness of newly certificated normal, utility, acrobatic, and commuter category airplanes. On February 9, 1996, the FAA revised part 23 by Amendment No. 23-48 (61 FR 5148) to require damage-tolerance-based inspections and procedures on all newly certificated commuter category airplanes.

Other airplanes were not affected by the described rule changes and thus do not have prescribed damage-tolerance-based inspections and procedures. These airplanes fall into four basic categories: (1) airplanes with non-damage-tolerance-based SIPs, based solely on service history, as prescribed in AC No. 91-60, "The Continued Airworthiness of Older Airplanes"; (2) airplanes that were certificated with design-life limits on the entire airplane or on major components such as the wing, empennage, or fuselage; (3) airplanes that were designed to "fail-safe" criteria to comply with fatigue requirements; and (4) airplanes that were certificated with limited consideration being given to metal fatigue.

This Proposal

This proposed rule responds to the provisions of 49 U.S.C. 44717, which requires the Administrator to "prescribe regulations that ensure the continuing airworthiness of aging aircraft... [and] to make inspections and review the maintenance and other records of each aircraft an air carrier uses to provide air transportation that the Administrator decides may be necessary to enable the Administrator to decide whether the aircraft is in safe condition and maintained properly for operation in air transportation."

As a result of requirements stipulated in 49 U.S.C. 44717, the FAA proposes to prohibit the operation of certain airplanes in scheduled service unless the Administrator or the Administrator's designee has determined that maintenance of the aircraft's age-sensitive parts and components has been adequate and timely. All airplanes operating under part 121, all U.S.-registered multiengine airplanes operating under part 129, and all multiengine airplanes conducting scheduled operations under part 135 would be affected.

Air carriers would be required to make each airplane and certain records related to the maintenance of age-sensitive components of the airplane available to the Administrator. Also, each affected airplane would be prohibited from operating unless damage-tolerance-based

inspections and procedures are included in the maintenance or inspection program used on each airplane in accordance with a specified schedule. Damage-tolerance-based inspections and procedures would be required on all affected airplanes no later than December 20, 2010.

The airplanes affected by this proposed rule transport a significant proportion of those passengers carried in scheduled passenger service and are the most prevalent airplanes operated in such service.

This notice does not propose requirements for rotorcraft or single-engine airplanes, nor does it propose requirements for on-demand passenger- or cargo-carrying operations under 14 CFR part 135. The scope of this proposal includes the preponderance of aircraft the Congress intended to cover under the AASA. Furthermore, the FAA anticipates that the resource-intensive implementation of the proposed aircraft and records inspection provisions may be difficult to administer initially, but that FAA (and designee) resources, in the future, will have the capacity to oversee additional fleets of aircraft.

Thus, in a future notice, the FAA will propose aging aircraft requirements necessary to cover the operation of all the other aircraft used by air carriers to provide air transportation. For the purpose of developing those proposals, the FAA may consider the information (e.g.,

documents in public docket) it develops for the rule proposed in this notice. It is possible that those future proposals could be similar to the requirements proposed in this notice; however, because of the differences in the designs, operations, and maintenance of those aircraft, differences between this notice and the future proposals are likely.

Congress also instructed the Administrator to encourage governments of foreign countries and relevant international organizations to develop programs addressing aging aircraft concerns. Most foreign air carriers and foreign persons engaged in common-carriage operations have maintenance program requirements adopted by their governments. The FAA issues the airworthiness certificates for U.S.-registered airplanes. By including part 129 in this proposed rule, foreign air carriers and foreign persons operating U.S.-registered multiengine aircraft within or outside the United States would be required to include damage-tolerance-based inspections and procedures in their maintenance programs and be subject to aging aircraft records reviews and inspections. This action forms a portion of the FAA's response to the AASA by helping to ensure the continued airworthiness of aging U.S.-registered airplanes operated worldwide.

This proposal also would revise current 14 CFR § 183.33(a) to expand the authority of the

Designated Airworthiness Representative (DAR). The DAR would be authorized to conduct the proposed records reviews and inspections on behalf of the Administrator. When this proposal becomes a final rule, the FAA intends to recommend that the International Civil Aviation Organization (ICAO) and the Joint Aviation Authorities (JAA) consider making similar changes to their recommended practices and requirement.

Inspections

The FAA intends to verify that each operator has records to show that they have accomplished all required maintenance tasks, as well as the damage-tolerance-based inspections and procedures that would be required by this proposal. The FAA would validate that these records are correct for each affected airplane during the records review and inspection required by this proposed rule.

Section 44717 of 49 U.S.C. specifies that the records reviews and inspections be carried out as part of each aircraft's heavy maintenance check after the 14th year in service. For airplanes that have already completed 14 years in service, the proposal would require the first records review and inspection within 3 to 5 years of the effective date of the rule. This proposal would generally require the first records review and inspection to be accomplished no later than 5 years after the 14th year in service.

The FAA realizes that the first inspection required 5 years after the 14th year in service may not be consistent with current operator maintenance schedules. As a result, the records reviews and inspections carried out by the Administrator or the Administrator's designee may significantly affect these maintenance schedules, because the reviews and inspections may not coincide with current maintenance schedules.

In formulating this proposal, the FAA considered options for setting repeat intervals. Among those considered were the heavy maintenance check interval, heavy maintenance visit interval, or the "letter check" (e.g., "C", "D", or "E") interval or other equivalent check interval an operator may use. The FAA reviewed variabilities in the parameters used by operators to carry out scheduled maintenance requirements such as flight hours, calendar time, or a combination of both. The FAA also considered the phasing and segmenting of heavy maintenance checks and found that the intervals varied from 1 to 27 years.

In Air Transport Association of America (ATA) memorandum number 96-AE-014, dated March 11, 1996, the Airworthiness Concern Coordination Task Force recommended that "a 'C' check compliance period (18 months) or 'D' check period (5 years) be adopted for all rules unless it can be shown that a shorter time interval is required for

safety reasons." A copy of this memorandum has been placed in the docket.

Individual operator maintenance or inspection check intervals have been adjusted over the years based on service experience and the operational environment of the aircraft. The adjustment, for the most part, has been toward increasing the time between subsequent check intervals. Consequently, maintenance check intervals vary among operators. To comply with the AASA, the 5-year repetitive interval after the initial inspection, not withstanding the escalations, best helps accomplish the safety goal of the AASA.

The FAA has determined that the best approach is to specify a fixed repeat interval when the Administrator will carry out records reviews and inspections of the affected airplanes. The FAA has chosen the 5-year repeat interval to meet its obligations, as established in 49 U.S.C. 44717.

To reduce the burden on the operator, the record reviews and inspections could take place at any time before the deadlines specified in the proposal. This allows the inspections to coincide with an airplane's normally scheduled maintenance visit when structural components are accessible for inspection. However, if an operator's maintenance interval exceeds 5 years, the operator will be obligated sooner than the end of the

interval to make the airplane available to the Administrator or the Administrator's designee for the records review and inspection required by this proposal. For many smaller airplanes, the maintenance visit intervals are less than 5 years. In those cases, the repetitive intervals of the aging airplane records reviews and inspections would not exceed 5 years.

Conducting the inspections during normally scheduled maintenance visits will allow maximum use of the FAA's resources while minimizing the disruption to the operator. It also ensures that a significant portion of the airplane is accessible to the Administrator or the Administrator's designee and allows, to the extent possible, a visible determination of compliance with aging aircraft requirements. Although it is the FAA's intent to carry out records reviews and inspections to the extent that the aircraft structure is accessible during the maintenance visit, the FAA may require additional access to determine that the maintenance of the airplane's age-sensitive parts and components has been adequate and timely.

The proposed rule specifies that airplanes already at their 25th year in service must be inspected within 3 years after the effective date of the rule. This earlier compliance time for the older airplanes will ensure that the oldest airplanes are inspected first and will distribute the workload for the initial inspections.

The FAA estimates that 1,550 airplanes affected by this proposed rule would exceed 24 years in service by 1998. The estimated number of airplanes that will be 15 years old by 1998 is 2,850. Therefore, the proposed rule provides for approximately 1,500 airplanes to be inspected within the first 3 years following the effective date of the rule, followed by an approximately equal amount to be inspected in the subsequent 2 years.

The proposed rule also would require the operator to notify the FAA 60 days before the aircraft is available for the aging airplane records review and inspection. This would ensure that the Administrator or the Administrator's designee would be able to make the plans necessary to accomplish the aging airplane records review and inspection.

Records Review

For the Administrator to fulfill his or her obligation under 49 U.S.C. 44717, this proposal would require that certain records be made available by the operator. Operators are already required by existing regulations to maintain these records and reports. Although the proposal would require status lists and reports of specific maintenance actions, if needed, the FAA has the authority under exiting regulations to request all supporting documentation for the lists.

This proposal would establish a new requirement for "total years in service." The FAA has determined that this new requirement is essential for the Administrator and the operator to determine the compliance time for the initial and repetitive inspections. To meet this requirement, the operator would retain records validating when the initial certificate of airworthiness was issued for each airplane.

In addition, the FAA is aware that an airframe's flight cycles are not currently being collected by operators of small airplanes under part 135. This proposal would require that the operator make certain records and reports available to the FAA during the proposed aging airplane records review inspection.

Damage-Tolerance-Based Inspections and Procedures

A damage-tolerance-based inspection and procedure refers to "an inspection program that specifies procedures, thresholds, and repeat intervals that have been developed using damage-tolerance principles." Damage-tolerance-based inspections and procedures are developed by a manufacturer or operator based on an engineering evaluation of likely sites where damage could occur, considering expected stress levels, material characteristics, and projected crack growth rates. Damage-tolerance-based inspections and procedures identify inspection sites, specify inspection techniques; define

thresholds for the initial inspection; and prescribe repeat inspection intervals. Test data and service experience are used to support the analysis.

The most important information used to develop a damage-tolerance-based inspection and procedure is derived analytically or by test, and the inspections are intended to anticipate locations where fatigue cracking might occur. Therefore, it is inappropriate to change damage-tolerance-based inspections and procedures solely on service experience without a significant engineering evaluation to confirm that there are no areas subject to fatigue cracking other than those revealed by the service experience. The engineering evaluation should include considering the detailed design data of the airplane, which is under the control of the manufacturer. For this reason, all damage-tolerance-based inspections and procedures should be developed under the technical direction of the type certificate holder for that airplane, with support from the operators when appropriate. However, the FAA would consider damage-tolerance-based inspections and procedures submitted by any applicant for approval if they are based on tests and service-supported damage-tolerance evaluations for that airplane model.

The damage-tolerance-based inspections and procedures specified in this proposal can be developed using one of the following methods:

(1) Damage-tolerance-based inspections and procedures that comply with § 25.571, Amendment 25-45 (43 FR 46238), or that comply with a subsequent amendment thereto;

(2) Damage-tolerance-based inspections and procedures that comply with the damage-tolerance provisions for metallic structure listed in 14 CFR § 23.573, Amendment 23-45 (58 FR 42163), or that comply with a subsequent amendment thereto;

(3) AC 91-56 "Supplemental Structural Inspection Program for Large Transport Category Airplanes" dated May 6, 1981;

(4) Draft AC 91-MA "Continued Airworthiness of Older Small Transport and Commuter Airplanes; Establishment of Supplemental Inspection Programs." A notice of availability for this AC is published concurrently with this proposal; or

(5) Any other method that the Administrator finds complies with the principles of damage tolerance.

Although this proposed rule specifies dates by which damage-tolerance-based inspections and procedures would be required, the thresholds for these inspections may occur much later. While the damage-tolerance-based inspections and procedures would need to be developed within the regulatory timeframe proposed, the times when the inspections would be completed would depend on the damage-tolerance assessment.

For newly certificated airplanes, damage-tolerance-based inspections necessary to prevent catastrophic failure must be included in the Airworthiness Limitations Section of the Instructions for Continued Airworthiness required by
§ 23.1529 or § 25.1529.

Damage-tolerance-based inspections and procedures for airplanes certificated before the amendments that require damage tolerance as part of airplane type design may be approved through an amended or supplemental type certificate. Such a certificate would identify the damage-tolerance-based inspections and procedures as an airworthiness limitation on the airplane.

Damage-tolerance-based inspections and procedures for certain older airplanes also may be approved by a Letter of Approval issued by the FAA Aircraft Certification Office cognizant of the type certificate. The Letter of Approval would place an operational requirement for the operator's affected airplanes.

For some airplanes, the FAA has approved major structural modifications under a supplemental type certificate (STC). The original airplane manufacturer may not have sufficient technical data pertinent to these modifications to assist the airplane operators in conducting a damage-tolerance assessment of the modification. In these situations, the FAA expects the

operator to work with the STC holder and the original airplane manufacturer to develop damage-tolerance-based inspections and procedures for that modification. In some instances, the operator may not be able to work with the STC holder or manufacturer. These operators may elect to conduct their own damage-tolerance assessments. If an operator elects to develop damage-tolerance-based inspections and procedures in this fashion, competent engineering personnel, as well as inspection findings from the current maintenance or inspection program, should be used in conjunction with the airplane's design data base and model fleet experience. These data should be developed by the original manufacturer, and the STC holder should provide the basis for the damage-tolerance-based inspections and procedures; however, the operator also can develop its own data. FAA-approved major structural repairs should be analyzed in the same manner as modifications accomplished under an STC. Such procedures ensure that damage-tolerance-based inspections and procedures address each airplane affected by this proposal, including any modifications or repairs made to the basic airframe.

The FAA is aware that for some currently operating airplanes it may be difficult to develop damage-tolerance-based inspections and procedures. For example, the manufacturer may have gone out of business; technical

data may not be adequate; the technical knowledge base may no longer be readily available; or the development of a damage-tolerance-based inspections and procedures may not be economically viable. If any of these conditions exist and appropriate damage-tolerance-based inspections and procedures cannot be developed those airplanes would not be eligible for operation under part 121, 129, or 135 after the dates specified in the proposal.

Non-damage-tolerance-based SIPs based on AC 91-60 have been mandated by ADs on the following airplanes: Douglas DC-3 and DC-6; Convair 240, 340, 440, 580, and 600 series; Lockheed Electra; and the Fokker F-27. Although inspections and procedures based on AC No. 91-60 address known service difficulties, they do not anticipate the possibility of future fatigue cracks that could be predicted through the use of damage-tolerance principles. Some inspection programs developed in accordance with AC No. 91-60 do not qualify as damage-tolerance-based inspections and procedures because they are either based solely on service experience or they may combine partial damage-tolerance assessments with service experience. For these reasons, the proposed rule would not allow continued use of inspection programs based on AC No. 91-60 alone. Instead, it proposes to require damage-tolerance-based inspections and procedures to supplement or replace

existing inspection programs based on AC No. 91-60 no later than December 20, 2010.

Designated Airworthiness Representatives (DAR)

Section 44717 of 49 U.S.C. allows the Administrator to delegate the aging aircraft records reviews and inspections to properly qualified private persons as provided under 49 U.S.C. 44701(a)(2)(B) and (C). The FAA normally delegates similar authority to individuals under 49 U.S.C. 44702(d). Those delegations are contained in part 183. Because of the large number of airplanes (over 3,000) that would have to be inspected in a short period of time (5 years) and an anticipated growth of the aging fleet, the FAA proposes to permit such records reviews and inspections to be accomplished by a DAR authorized under part 183.

This proposal would revise current § 183.33 to permit DARs to conduct the reviews and inspections necessary to determine the continued effectiveness of airworthiness certificates, including the proposed reviews and inspections. The FAA would issue guidelines to its aviation safety inspectors and DARs on how to monitor and conduct records reviews and inspections in compliance with this proposed rule.

Proposed Appendixes

The proposed appendixes list the FAA-established design-life goals of several airplane types that are

commonly used in scheduled service to assist in implementing this proposal.

For airplane models listed in the proposed appendix to part 121 and for airplane models initially certificated to carry 10 or more passengers located in the proposed appendix to part 129 and the proposed appendix to part 135, the proposal could effectively delay the implementation date of damage-tolerance-based inspections and procedures for these aircraft from 4 years after the effective date of the rule to the time the aircraft reaches its design-life goal.

However, for airplane models initially certificated to carry nine or fewer passengers listed in the proposed appendixes to part 129 and part 135, the proposal requires damage-tolerance-based inspections and procedures sooner than December 20, 2010.

The airplane models with 10 or more passenger seats listed in the proposed appendixes have been certificated with limits on either the structure or the maintenance program, or they have had subsequent structural analysis and testing. These limits are considered adequate to ensure the safety of these airplanes until they reach the listed design-life goal.

Early small airplane regulations did not consider fatigue until 1956, and then only on pressurized fuselages. With the exception of the Fairchild Model

SA227-TT, the passenger airplanes with nine or fewer seats included in the proposed appendixes to part 129 and part 135 were initially certificated in the United States without any consideration being given to wing or empennage fatigue. However, the airworthiness authorities of the United Kingdom and Australia required fatigue evaluation on these airplanes before allowing operation in their countries. The airplane models listed in the proposed appendixes have been used consistently in scheduled commuter service in the United States for the past several years, and many of the highest-time airplanes have accumulated a number of flight hours approaching or exceeding the limits set by the airworthiness authorities of these other countries.

Most airplanes with a capacity for nine or fewer passengers were not listed in the appendixes because these airplanes are not commonly used in U.S. commuter operations and tend to have lower fleet times. Most were designed with sufficiently low stresses to allow them to operate safely without the need for damage-tolerance-based inspections and procedures before December 20, 2010.

However, if at a later date the FAA learns of specific airplanes with nine or fewer passenger seats commonly being used in commuter service with flight hours approaching or exceeding the limits set by the airworthiness authorities of other countries, the FAA will

consider future rulemaking to add those models to the proposed appendixes.

A description of the airplanes in the proposed appendixes and their associated design-life goals are listed below. The FAA has reviewed the assessments that resulted in the life limit requirements described below, and has determined that those requirements appropriately, if not conservatively, reflect the times in the aircraft's service lives when significant maintenance must be performed on the critical structures to maintain the level of safety required for air transportation.

Beech 99 (all models).

The Beech 99 is an unpressurized, 17-seat airplane configured for 15 passenger seats and 2 pilot seats. The Beech 99 initially was certificated in 1968 under part 23, Amendment No. 3, and is listed on type certificate data sheet (TCDS) A14CE. Special conditions were imposed on the Beech 99 to require fatigue validation testing of the wing and carry-through structure. In 1990, Beech Aircraft Company issued Mandatory Service Bulletin No. 2297 to require replacement of the entire outboard wing and the entire wing center section after 46,000 hours. This retirement time is based on full-scale fatigue testing.

Beech 1900 (all models).

The Beech 1900, 1900C, and 1900D are pressurized, 21-seat airplanes configured for 19 passenger seats and

2 pilot seats. The 1900 and 1900C were initially certificated under Special Federal Aviation Regulation (SFAR) No. 41 in 1983, and the Beech 1900D was initially certificated in the commuter category in 1991. All models are listed on TCDS A24CE. All three models have certified life limits of 45,000 hours for the empennage listed in the Airworthiness Limitations sections of their maintenance manuals.

Beech 300, 300LW, B300, and B300C.

The Beech 300, 300LW, B300, and B300C are 15-seat airplanes configured for 13 passenger seats and 2 pilot seats. The Beech 300 and 300LW were initially certificated under SFAR No. 41 in 1988, and the Beech B300 and B300C were initially certificated in the commuter category in 1989. All models are listed on TCDS A24CE. All four models have certified 30,000-hour life limits for the empennage listed in the Airworthiness Limitations sections of their maintenance manuals.

BAe Jetstream Models 3101 and 3201.

The BAe Jetstream 3101 and 3201 are pressurized, 21-seat airplanes configured for 19 passenger seats and 2 pilot seats. The Jetstream 3101 was initially certificated under SFAR No. 41 in 1982 and is listed on TCDS A21EU. The Jetstream 3201 was initially certificated in the commuter category in 1988 and is listed on TCDS A56EU. Both airplanes have certified life limits of

30,000 landings for the wing and empennage listed in the Airworthiness Limitations sections of their maintenance manuals. For flights of 1 hour in length, this equates to a 30,000-hour limit.

Cessna 402.

The Cessna 402 is a small, unpressurized, 10-seat airplane configured for 8 passenger seats and 2 pilot seats. The Cessna 402 was initially certificated in 1956, the Cessna 402A and 402B in 1969, and the Cessna 402C in 1978. They are listed on TCDS A7CE and were certificated in the United States without fatigue requirements. The 402, 402A, and 402B are subjected to AD No. 79-10-15, which mandates a 400-hour repetitive inspection for fatigue cracks on critical components of the wing structure. The proposed appendixes list a design-life goal of 12,000 hours for these aircraft, based on recent Cessna Aircraft Company calculations. The appendix lists a design-life goal of 7,700 hours for the Cessna 402C, based on fatigue limits set on the wing structure by the Airworthiness Authorities of Australia and the United Kingdom.

De Havilland DHC-6 (all models).

The de Havilland DHC-6 is an unpressurized, 24-seat airplane configured for 22 passenger seats and 2 pilot seats. The DHC-6 was initially certificated in 1966 under Civil Air Regulation (CAR) 3, Amendment No. 8, and in 1969

under SFAR No. 23, and is listed on TCDS A9EA. Transport Canada, designated as the airworthiness authority of the country of design by ICAO for the continued airworthiness of the DHC-6, issued an AD that is mandatory in Canada and imposes service life limits on the airplanes listed in the de Havilland Structural Components Service Life Limits Manual, PSM 1-6-11, Revision 4, dated May 31, 1996. This Canadian AD, issued in September 1996, mandates the retirement of the airplane at 66,000 hours.

Dornier DO-228 (all models).

The Dornier DO-228 is an unpressurized, 21-seat airplane configured for 19 passenger seats and 2 pilot seats. The DO-228-100 and DO-228-200 were initially certificated in 1984, the DO-228-101 and DO-228-201 in 1985, and the DO-228-202 in 1986 under part 23, Amendment No. 23, and SFAR No. 41C. The DO 228-212 was certificated in the commuter category in 1990. All are listed on TCDS A16EU. The Airplane Maintenance Manual for the DO-228-100/-101 and DO-228-200/-201/-202/-212 includes Airworthiness Limitation section 05-05-00, which specifies mandatory airplane replacement times. The DO-228-100 and DO-228-200 have a fatigue life of 42,800 hours; the DO-228-101 and DO-228-201 have a fatigue life of 32,800 hours; and the DO-228-202 has a fatigue life of 29,600 hours. The fatigue life for the DO-228-212 is 26,400 hours for all serial numbers except 155, and serial

numbers 191 and higher; and 42,800 hours for serial number 155 and serial numbers 191 and higher.

Embraer EMB-110.

The Embraer EMB-110 is a pressurized, 21-seat airplane configured for 19 passenger seats and 2 pilot seats. The EMB-110 was initially certificated under SFAR No. 41A in 1978 and is listed on TCDS A21SO. The EMB-110 was initially certificated with a 30,000-hour life limit on the wing and carry-through structure. This limit is listed in Note 3 of TCDS A21SO.

Fairchild Metro SA227.

The Fairchild Metro SA227 series includes the SA227-AT, -TT, -AC, -BC, -PC, -CC, and -DD airplanes. The SA227-AT is a 16-seat airplane configured for 14 passenger seats and 2 pilot seats. It was initially certificated under SFAR No. 41C in 1981. The SA227-TT is an 11-seat airplane configured for 9 passenger seats and 2 pilot seats. It was initially certificated under SFAR No. 41B in 1981. Both models are listed on TCDS A5SW and have 35,000-hour certified life limits on their empennages.

The SA227-AC, -BC, and -PC are pressurized, 22-seat airplanes configured for 20 passenger seats and 2 pilot seats. They were initially certificated under SFAR No. 41C in 1981, 1989, and 1985, respectively. All three models are listed on TCDS A8SW and have a 35,000-hour certified empennage life.

The SA227-CC and -DC are pressurized, 21-seat airplanes configured for 19 passenger seats and 2 pilot seats. They were initially certificated in the commuter category of part 23 in 1990. Both models are listed on TCDS A18SW and have 35,000-hour certified empennage life limits.

Fairchild Metro SA226-TC.

The SA226-TC is a pressurized, 22-seat airplane configured for 20 passenger seats and 2 pilot seats. It was initially certificated under part 23, Amendment No. 6, in 1970, and later certificated under SFAR No. 41C in 1982. It is listed on TCDS A8SW and has a 35,000-hour certified empennage life limit.

Pilatus Britten-Norman BN-2A MK III (all models).

The Pilatus Britten-Norman BN-2A MK III Trislander is an unpressurized, 18-seat airplane configured for 16 passenger seats and 2 pilot seats. The BN-2A MK III was initially certificated in 1971 under part 23, Amendment No. 8, and is listed on TCDS A29EU. The wing is limited to 23,900 hours at initial certification, assuming one landing per flight hour. For shorter flights, the wing is limited to 20,480 hours. This notice proposes the more conservative number.

Piper Navajo and PA-31 Series.

The Piper Navajo and PA-31 series airplanes are 7- to 11-seat airplanes with seating configurations of 5 to 9

passenger seats and 2 pilot seats. Those airplanes listed in the appendixes are capable of carrying six or more passenger seats and have been used in commuter service in significant numbers for several years. There are pressurized and unpressurized versions and models powered by piston or by turbopropeller engines. The unpressurized versions are listed on TCDS A20SO, and the pressurized versions are listed on TCDS A8EA. The unpressurized versions were certificated in the United States under older regulations that did not require fatigue substantiation, and the pressurized versions have no fatigue certification of the wing structure and no fatigue limits on the pressurized cabin.

The Civil Airworthiness Authorities (CAA) of Australia and the United Kingdom required fatigue substantiation of these airplanes as a condition for their initial certification. The design-life goals listed in the appendixes represent limits certified by the Australian CAA. The limits for unpressurized models are based on the fatigue limits of the wing spar lower cap, and the limits for the pressurized models are based on the pressurized cabin.

Short Brothers SD3-30.

The Short Brothers SD3-30 is a 32-seat airplane configured for 30 passenger seats and 2 pilot seats. The SD3-30 was certificated in the United States in 1976 under

part 25, Amendment No. 30. The manufacturer has limited the maintenance program to 57,600-flight hours contingent on the successful completion of a mid-life inspection at 28,800 hours, as defined in the airplane maintenance manual.

Short Brothers SD3-60.

The Short Brothers SD3-60 is a 41-seat airplane configured for 39 passenger seats and 2 pilot seats. The SD3-30 was certificated in the United States in 1982 under a United Kingdom certification basis that is equivalent to part 25, Amendment No. 34. The manufacturer has limited the maintenance program to 28,800 hours, as defined in the airplane maintenance manual.

Short Brothers SD3-Sherpa.

The Short Brothers SD3-Sherpa is a 32-seat airplane configured for 30 passenger seats and 2 pilot seats. The SD3-30 was certificated in the United States in 1990 under a United Kingdom certification basis and to the additional validation requirements of part 25, Amendment No. 35. The manufacturer has limited the maintenance program to 40,000 hours, as defined in the airplane maintenance manual.

Related Activity

Concurrent with this proposal, the FAA is issuing two Notices of Availability of ACs. The first, AC No. 91-MA, "Continued Airworthiness of Older Small Transport and

Commuter Airplanes; Establishment of Supplemental Inspection Programs," provides an acceptable means, but not the only means, to comply with the proposed damage-tolerance-based inspections and procedures. The second, AC No. 120-XX, "Aging Airplane Records Reviews and Inspections," provides guidance regarding how an operator complies with this proposal.

There are other initiatives being considered by the FAA to address Aging Aircraft issues. The FAA has received a recommendation from the Aviation Rulemaking Advisory Committee (ARAC) on rulemaking in the area of repair assessment of pressurized fuselages. The proposal would require a repair assessment for the pressurized fuselages of Airbus A300; Boeing 707/720, 727, 737, and 747; Douglas DC-8, DC-9/MD-80, and DC-10; British Aerospace BAC 1-11; Fokker F-28; and Lockheed L10-11 airplanes. The recommendation currently is being reviewed within the FAA, and publication of an NPRM is anticipated in the near future.

In addition, the FAA has found that some operators do not have a programmatic approach in place to appropriately address airplane corrosion. A rulemaking effort is being considered that would require development and implementation of a corrosion prevention and control program for all airplanes used in air transportation. The

FAA anticipates publication of rulemaking on this subject in 1998.

On December 20, 1995, the FAA issued the final rule, "Commuter Operations and General Certification and Operations Requirements" (60 FR 65832), also known as the "Commuter Rule," to address commuter air operations in the United States. That rulemaking requires that all airplanes used in scheduled passenger service capable of carrying 10 or more passengers meet specific performance requirements by December 20, 2010. For some older airplanes, significant modifications would be necessary to meet those new requirements. That rulemaking provided an extended compliance date to give operators time to decide whether to retrofit those airplanes or phase them out of scheduled service. Because development of damage-tolerance-based inspections and procedures may be difficult for some airplanes currently operating in scheduled service, the FAA is proposing December 20, 2010, as a compliance date for this rulemaking.

Section-by-Section Analysis

§ 119.3

This section would be revised to include the definition of "years in service."

§ 121.368

Proposed paragraph (a) specifies that the Administrator will conduct the records reviews and

inspections as necessary to decide whether an airplane is in safe condition and maintained properly for operation in air transportation.

Proposed paragraph (b) would prohibit a certificate holder from operating an airplane after a date specified in the section unless the Administrator has completed the aging aircraft records review and inspection.

Proposed paragraph (b) also would set forth the times by which a certificate holder must ensure its airplanes are inspected. Aging airplanes are divided into three categories for these inspections to ensure that the oldest aircraft are inspected first. For those airplanes that will have exceeded 24 years in service, the first records review and inspection would be required no later than 3 years after the effective date of the proposed rule. For those airplanes exceeding 14 but not 24 years in service at the time the proposed rule becomes effective, the first records review and inspection would be required no later than 5 years after the effective date of the proposed rule. Finally, airplanes that will exceed 14 years in service subsequent to the proposed rule's effective date would be required to undergo the first records review and inspection no later than 5 years after their 14th year in service. All aging airplane records reviews and inspections specified in this section would need to be repeated at intervals not to exceed 5 years.

Proposed paragraph (c) would permit the Administrator to approve 90-day extensions on the thresholds and repeat intervals of aging aircraft records reviews and inspections to accommodate unforeseen scheduling conflicts.

Proposed paragraph (d) would require a certificate holder to make an affected airplane and certain associated records available for review and inspection.

Proposed paragraph (e) would require a certificate holder to notify the Administrator at least 60 days before the airplane and its associated records would be made available for review and inspection.

§ 121.370a

Proposed paragraph (a) would require certificate holders to ensure that, subject to certain limited exceptions, the maintenance programs for airplanes operating under part 121 include damage-tolerance-based inspections and procedures within 4 years after the effective date of the rule.

Proposed paragraph (b) would permit operators of airplanes listed in appendix M to part 121 to operate these airplanes without non-damage-tolerance-based inspections and procedures in their maintenance programs until reaching a design-life goal specified in the appendix, or 4 years after the effective date of the rule, whichever occurs later. However, no aircraft may operate

without damage-tolerance-based inspections and procedures after December 20, 2010.

Proposed paragraph (c) would permit operators of airplanes that have non damage-tolerance-based inspections and procedures already mandated by ADs to continue to operate those airplanes until December 20, 2010. After that date, the operator must have damage-tolerance-based inspections and procedures as part of their maintenance programs to be eligible to operate those airplanes under part 121.

Part 121, Appendix N

This appendix lists the airplanes and the design-life goals that are referenced in proposed § 121.370a.

§ 129.1

Paragraph (a) would update the reference to section 402 of the repealed and recodified FAA Act of 1958.

Paragraph (b) would clarify that proposed §§ 129.16 and 129.33 also apply to operations of U.S.-registered aircraft operated solely outside the United States.

§ 129.16

This proposed section is similar to proposed § 121.370a.

Proposed paragraph (a) would require foreign air carriers or foreign persons who operate U.S.-registered multiengine airplanes that were initially type

certificated with 10 or more passenger seats to include damage-tolerance-based inspections and procedures in their maintenance programs within 4 years of the effective date of the proposed rule.

Proposed paragraph (b) would require foreign air carriers or foreign persons who operate U.S.-registered multiengine airplanes that were initially type certificated with nine or fewer passenger seats to include damage-tolerance-based inspections and procedures in their maintenance programs before December 20, 2010.

Proposed paragraph (c) would permit foreign air carriers or foreign persons to operate U.S.-registered airplanes of the type listed in appendix B to part 129 without damage-tolerance-based inspections and procedures in their maintenance programs until reaching a design-life goal specified in the appendix, or 4 years after the effective date of the proposed rule, whichever occurs later. However, no airplane may be operated without damage-tolerance-based inspections and procedures after December 20, 2010.

Proposed paragraph (d) would permit foreign air carriers or foreign persons to operate U.S.-registered airplanes that have non-damage-tolerance-based inspections and procedures already mandated by ADs to continue to operate those airplanes until December 20, 2010. After that date, the operator must have damage-tolerance-based

inspections and procedures as part of their maintenance programs to be eligible to operate those airplanes under part 129.

§ 129.33

This proposed section is similar to proposed § 121.368.

Proposed paragraph (a) specifies that the Administrator will conduct the records reviews and inspections as necessary to decide whether an airplane is in safe condition and maintained properly for operation in air transportation.

Proposed paragraph (b) would prohibit a foreign air carrier or foreign person from operating a U.S.-registered airplane after a date specified in the section unless the Administrator has completed the aging aircraft records review and inspection.

Proposed paragraph (b) also would set forth the times by which a foreign air carrier or foreign person must ensure its U.S.-registered multiengine airplanes are inspected. Aging airplanes are divided into three categories for these inspections to ensure that the oldest airplanes are inspected first. For those airplanes that will have exceeded 24 years in service, the first records review and inspection would be required no later than 3 years after the effective date of the proposed rule. For those airplanes exceeding 14 but not 24 years in

service at the time the proposed rule becomes effective, the first records review and inspection would be required no later than 5 years after the effective date of the proposed rule. Finally, airplanes that will exceed 14 years in service subsequent to the proposed rule's effective date would be required to undergo the first records review and inspection no later than 5 years after the 14th year in service. All aging airplanes records reviews and inspections specified in this section would need to be repeated at intervals not to exceed 5 years.

Proposed paragraph (c) would permit the Administrator to approve 90-day extensions on the thresholds and repeat intervals of aging airplane records review and inspection to accommodate unforeseen scheduling conflicts.

Proposed paragraph (d) would a foreign air carrier or foreign person to make an affected airplane and certain associated records available for review and inspection.

Proposed paragraph (e) would require a foreign air carrier or foreign person to notify the Administrator at least 60 days before the airplane and its associated records would be made available for review and inspection.

Part 129, Appendix B

This appendix would list the airplanes and the design-life goals that are referenced in proposed § 129.16.

§ 135.168

This proposed section is similar to proposed §§ 121.370a and 129.16.

Proposed paragraph (a) would require operators of multiengine airplanes operating in scheduled service that were initially type certificated with 10 or more passenger seats to include damage-tolerance-based inspections and procedures in their inspection programs within 4 years of the effective date of the proposed rule.

Proposed paragraph (b) would require operators of multiengine airplanes in scheduled service that were initially type certificated with nine or fewer passenger seats to include damage-tolerance-based inspections and procedures in their inspection programs before December 20, 2010.

Proposed paragraph (c) would permit operators of airplanes listed in appendix G to part 135 to operate these airplanes in scheduled service without damage-tolerance-based inspections and procedures in their inspection programs until reaching a design-life goal specified in the appendix, or 4 years after the effective date of the proposed rule, whichever occurs later. However, no airplane may be operated without damage-tolerance-based inspections and procedures after December 20, 2010.

Proposed paragraph (d) would permit operators of airplanes that have non-damage-tolerance-based inspections

and procedures already mandated by ADs to continue to operate those airplanes until December 20, 2010. After that date, the operator must have damage-tolerance-based inspections and procedures as part of their inspection programs to be eligible to operate those airplanes under part 135.

§ 135.422

The proposed section is similar to proposed §§ 121.368 and 129.20.

Proposed paragraph (a) specifies that the Administrator will conduct the records reviews and inspections as necessary to decide whether an airplane is in safe condition and maintained properly for operation in air transportation.

Proposed paragraph (b) would prohibit a certificate holder from operating a multiengine airplane in scheduled operations after a date specified in the section unless the Administrator has completed the aging airplane records reviews and inspections.

Proposed paragraph (b) also would set forth the times by which a certificate holder must ensure its airplanes are inspected. Aging airplanes are divided into three categories for these inspections to ensure that the oldest aircraft are inspected first. For those airplanes that will have exceeded 24 years in service, the first records review and inspection would be required no later than 3 years after the effective date of the proposed rule. For those airplanes exceeding 14 but not 24 years in service at the time the proposed rule becomes effective, the first records review and inspection would be required no later than 5 years after the effective date of the proposed rule. Finally, airplanes that will exceed 14

years in service subsequent to the proposed rule's effective date would be required to undergo the first records review and inspection no later than 5 years after their 14th year in service. All aging airplane records reviews and inspections specified in this section would need to be repeated at intervals not to exceed 5 years.

Proposed paragraph (c) would permit the Administrator to approve 90-day extensions on the threshold and repeat intervals of the aging airplane records reviews and inspections to accommodate unforeseen scheduling conflicts.

Proposed paragraph (d) would require a certificate holder to make an affected airplane and certain associated records available for review and inspection.

Proposed paragraph (e) would require a certificate holder to notify the Administrator at least 60 days before the airplane and its associated records would be made available for review and inspection.

Part 135, Appendix G

This appendix lists the airplanes and the design-life goals that are referenced in proposed § 135.168.

§ 183.33

Paragraph (a) would expand the authority of DARs to permit them to make findings necessary to determine the continuing effectiveness of airworthiness certificates by

conducting the record reviews and inspections required by proposed §§ 121.368, 129.20, and 135.422.

Paperwork Reduction Act

This proposal contains information collections that are subject to review by OMB under the Paperwork Reduction Act of 1995 (Pub. L. 104-13). This title, description, and respondent description of the annual burden are shown below.

Title: Aging Aircraft Safety.

Description: The FAA proposes to require all airplanes operated under part 121, all U.S.-registered multiengine airplanes operated under part 129, and all multiengine airplanes used in scheduled operations under part 135 to undergo records reviews and inspections by the Administrator after their 14th year in service to ensure that the maintenance of these airplanes' age-sensitive parts and components has been adequate and timely. The FAA also proposes to permit certain representatives of the Administrator to conduct these inspections. The proposed rule also would prohibit operation of these airplanes after specified deadlines unless damage-tolerance-based inspections and procedures are included in the maintenance or inspection program.

This proposal represents a critical step toward compliance with the AASA of 1991. It would ensure the continuing airworthiness of the preponderance of aging

airplanes operating in air transportation by: (1) mandating aging aircraft records reviews and inspections for all of the airplanes described above, and (2) applying modern damage-tolerance analyses and inspection techniques to older airplane structures that were certificated before such techniques were available

Description of Respondents: Businesses or other for-profit organizations.

This proposal would constitute a recordkeeping burden for part 135 operators. Airframe flight cycles are not currently required to be collected by operators of small aircraft under part 135. This proposal would require the operator to record and maintain flight cycle information on their aircraft. This information is necessary to allow the FAA and the operator to accurately assess the fatigue condition of the airplane. Under part 135, a total of 209 airplanes would be affected. It is estimated that the reporting and recordkeeping requirements would take 30 minutes per airplane, per month, at an estimated cost of $20.00 per hour. The estimate of the total annual reporting and recordkeeping burden would be $25,080.00.

The agency solicits public comment on the information collection requirements to: (1) evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical

utility; (2) evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used; (3) enhance the quality, utility, and clarity of the information to be collected; and (4) minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology.

Individuals and organizations may submit comments on the information collection requirement by [insert date 120 days after publication in the Federal Register], and should direct them to the address listed in the **ADDRESSES** section of this document

Persons are not required to respond to a collection of information unless it displays a currently valid OMB control number. The burden associated with this proposal has been submitted to OMB for review. The FAA will publish a notice in the Federal Register notifying the public of the approval numbers and expiration date.

Regulatory Evaluation Summary

Changes to federal regulations must undergo several economic analyses. First, Executive Order 12866 directs Federal agencies to propose or adopt a regulation only

upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic impact of regulatory changes on small entities. Finally, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these assessments, the FAA has determined that this proposed rule: 1) would generate benefits justifying its costs and is not "significant" as defined in Executive Order 12866; 2) would be "significant" as defined in DOT's Policies and Procedures; 3) would have a significant impact on a substantial number of small entities; and 4) would not restrain international trade. These analyses, available in the docket, are summarized below.

Description of Costs

The proposed rule would generate primary costs to those scheduled operators of multiengine airplanes not currently subject to mandatory damage-tolerance based inspections and procedures. Additional costs may be incurred by manufacturers who participate in the development of these procedures for the affected airplane models. In addition to the costs for development and implementation of new inspections and procedures, the rule would also impose costs related to the additional FAA

physical inspections and records reviews mandated by the Congress to assure the continued airworthiness of aging airplanes. These costs would be incurred by both categories of operators of aging airplanes: (1) those who currently have damage-tolerance based inspections and procedures, and (2) those who would be required to develop such procedures under the proposed rule. Finally, the FAA itself would incur costs in conducting these inspections and records reviews, and in reviewing and approving the operator's inspections and procedures.

It should be noted that the attributed costs of this proposal do not include the expense of making repairs that may be found necessary during either the operator's damage tolerance based inspections or the oversight inspections conducted by the FAA. While the agency recognizes that such repairs may constitute a significant expense, the costs of such repairs is not attributed to this proposed rule because existing FAA regulations require that repairs be made as necessary to assure the airworthiness of the airplane.

It is also noted that this evaluation focuses on existing airplanes and does not directly address the costs that the proposed rule would eventually (15 years after production) impose on new production airplanes, primarily because such costs (particularly their present value) would constitute an insignificant proportion of the costs

represented in this study.

Development and Implementation Costs

The development and implementation costs of the inspections and procedures are calculated from a 1996 data collection of the fleet that would be affected. Approximately 1,190 airplanes were identified as being potentially subject to the requirements for development and implementation of the procedures and inspections under the proposed rule. The airplanes were then aggregated into 55 make-model groups consistent with the airplane groupings that would be covered under each individual inspection procedure document. Cost factors, ranging from .3 to 1.0, were then assigned to each airplane model group. These factors represent estimates of the proportion of full development costs that would be incurred for each airplane model group; recognizing that full program development costs for some models would be reduced either due to similarities between certain models or because some models already had a non-damage-tolerance based supplemental inspection program. Applying these cost factors produced the cost equivalence of 47 full SIP development efforts for the 55 models.

The methodology used to estimate the likely costs of the proposal first computed the costs that would be incurred: (1) if it were economically viable for every affected airplane in the database to meet the requirements

of the proposed rule, and (2) if every existing, affected airplane continued to operate throughout the study period (year 2018). Following these calculations, the evaluation then estimates: (1) the number of airplanes and models where compliance would not, in fact, be economically viable, (2) the costs that would, instead, be incurred as a result of that inability, and (3) the costs that would not be incurred due to the retirement of airplanes from scheduled service during the study period for reasons unrelated to the proposed rule.

Data were collected and aggregated concerning the average airplane weight in each airplane-model group, the average and maximum ages of the airplanes, the average numbers of seats, the counts of airplanes, whether or not there was a design life goal based on an imposed life limit of a major structural component, and whether each model grouping was already in compliance with a non-damage-tolerance based program as defined in §91.60. These data are used as controls or factors in the calculations that follow.

Under the proposal, the affected airplanes (15 years or older) would be generally subject to a mandated inspection program within 4 years after the effective date of the rule (the year 2002.) However, in an effort to reduce the economic impact, the proposal would delay the required compliance dates for those airplane models that

meet any of several conditions. Compliance would be delayed for airplanes with 9 or fewer passenger seats until the year 2010. Airplanes that have an FAA defined design life goal would not be required to have a damage-tolerance based inspection and procedures program until they had reached their design life goal, or until the year 2010, whichever occurs first. Similarly, compliance could be delayed up until the year 2010 for those models required by airworthiness directive to be maintained under a non-damage-tolerance based program. Based on these criteria, along with airplane age, the expected date of compliance for each group model fleet was projected.

Based on engineering estimates, the cost methodology employs a functional estimate (dependent on the size of the airplane) of the time needed to develop the program for each model. This function produces a range between 10,311 and 25,776 hours necessary to develop the program for each model group. Approximately 841,000 engineering hours would be required to produce inspections and procedures for all affected models. Based on an assumed, fully burdened engineering rate of $95 per hour[1], the SIP development cost estimates for the various model groups range between $980,000 and $2.45 million per model group.

[1] The rate for contract services was estimated by FAA field engineers, and it is believed to be higher than the cost that most parties will actually incur. The contract rate was used in order to be responsive to small entities that may have to rely on outside resources to develop their program.

The total development cost, assuming full development for every model group sums to $79.9 million. These costs were then reduced by the factors described above to account for related model efficiencies and for models with partially compliant programs in place. The application of these factors reduced the range of costs to a level between $310,000 and $2.45 million per group, with a total potential development cost estimate of $67.8 million. Again, at this point in the methodology, the estimates assume that the inspections and procedures would actually be developed for all affected models.

For some airplane models, the FAA expects that the development work would uncover the need for model-specific structural modifications, either to make certain areas of the airplane inspectable or to replace structural elements that are determined to be uninspectable and subject to critical fatigue damage. Absent the engineering development work itself, estimates of the extent and magnitude of these modifications are inexact. As such, the FAA has employed a cost estimate that it considers to be on the high side of feasible costs.

Similar to the development costs, the evaluation assumes a functional estimate of the likely structural modification costs for each airplane based on the size of the airplane. Separate functions were employed for airplanes certificated under Part 25 and for those

airplanes certificated under either Part 23 or CAR, based on the logic that the older and smaller airplanes were more likely to require modifications for inspectability. The cost estimates of the likely modifications range from $10,200 to $168,800 per affected airplane depending on airplane size and certification basis. (It should be noted that these costs are per airplane, whereas the inspection and procedure development costs are per model group.)

In the absence of more specific information, the evaluation assumes that one-half[2] of all affected models would require structural modifications as a result of the findings from the inspections and procedures development. The unit modification cost estimates from above were multiplied by the numbers of airplanes in each model group and then by one-half. These products were then summed across all models to yield a total potential modification cost of $65.0 million for the affected fleet.

The third major cost component of the development and implementation requirement involves conducting the actual inspections identified in the program for each model. For each model group, the evaluation assumes that the program directed inspections would begin when the fleet leader for that group reached 20 years of age or at the date the

[2] The estimate of "one-half of all affected models" is based upon expert judgment. The FAA requests public comment and supporting background regarding this estimate .

inspections and procedures were due, whichever occurred later. Under this logic, program directed inspections would begin anywhere between the years 2002 and 2014, depending on the characteristics of the individual airplane model group.

Again, based on engineering estimates, the cost methodology employs a functional model (dependent on the size of the airplane) of the expected number of critical locations that would need to be inspected on each airplane. It was assumed that each location would require four hours of inspection and that the burdened (including overhead) labor rate for that work would cost $55 per hour. These estimates produce a likely inspection cost ranging between $6,000 and $30,000 per airplane per inspection. Similar to the estimates of modification costs, these costs cannot be precisely estimated in the absence of the actual inspection and procedures development work for each model, and as such, the FAA has used what it considers to be high-end estimates.

In addition to the actual inspection work itself, the evaluation considers the incremental airplane downtime that would be necessitated by the additional work caused under this proposal. The evaluation assumes that each 40 hours of work caused by this proposal would require one

additional day of airplane downtime.[3] The economic cost of downtime was computed under the assumption that the average productive return on capital is equal to 7 percent of the value of that capital per year. Downtime costs were calculated as the product of the number of additional downtime days, divided by 365 days per year, times the average estimated value of the airplane at the year the program would be required, times 7 percent. This produced a unit downtime cost per airplane, per inspection ranging between $63 and $7,181 depending on the age and size of the airplane involved.

The numbers of inspections that could be expected throughout the study period (year 2018) were computed based on the factors: (1) the number of years between the year the program would be due and the year 2018, (2) the annual number of hours that each airplane would fly (ranging between 858 and 1154 hours per year[4], depending on airplane size), and (3) an assumed inspection interval of

[3] The rate of incremental downtime per unit of required additional work varies widely depending on the resources that are available at different maintenance facilities, the different types and sizes of airplanes involved, and the concomitant maintenance that is being performed on the airplane during the same maintenance period. Essentially, the amount of downtime is a question of how much parallel work can be conducted on the airplane at one time. This calculation is an attempt to be responsive to industry by not assuming that incremental work could always be done during the time that other maintenance was being performed.

[4] The annual flight hours were based on a regression of aircraft by number of seats and flight hours from page IX-22 of the 1995 FAA Aviation Forecasts. To avoid the appearances of excess precision and to account for the operating differences between transport category and small commuter airplanes, the results were aggregated into two broad categories: airplanes with 9 seats or less, and airplanes with 10 seats or more. The assumed inspection interval of 4,000 hours was estimated by FAA field engineering staff, based on their projections of what would be found to be necessary when the supplemental inspection programs are

every 4,000 hours. Finally the unit labor and downtime costs related to the operator inspections were multiplied by the numbers of airplanes in each model and by the expected numbers of inspections for that model during the study period. These products were then summed to represent the total potential operator inspection cost of the proposal: $33.5 million.

For the next step, the three major component costs of the development and implementation requirement were summed. The $67.8 million for developing the inspections and procedures, the $65.0 million for structural modifications, and the $33.5 million for operator inspections produced a total potential cost of $166.3 million. At this point, however, the evaluation methodology recognizes that the potential unit costs of the proposal would not be realized for all models. For some airplane models, the potential unit costs of the proposal could constitute significant proportions of, or actually exceed, the economic values of the airplanes involved.

For each airplane model group, the potential costs of compliance were compared to the estimated economic value of that group in the year the inspections and procedures would be due. In cases where the potential compliance

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developed. This number is an aggregated simplification since, especially for larger airplanes, it is expected that different areas of an airplane will have different inspection intervals.

cost would exceed 50 percent of the group value, the methodology assumes that the inspections and procedures would not be developed and implemented, and the related compliance costs would not be incurred. Instead, the affected 34 models would be retired or transferred out of scheduled service, and the attributed costs of the proposal for these models would be a 50 percent reduction in their economic value. Failure to comply with the rule would not ground an airplane and eliminate its value, but instead, would preclude its being used in scheduled passenger service. The airplane could still be used for cargo or on-demand service under part 135. This methodology produces a potential cost of $109.1 million for those models where compliance would be economically feasible, and an attributed $33.6 million in reduced value for the models that could not reasonably comply. Total potential costs under this assumption equal $142.7 million.

As noted at the beginning of this section, the $142.7 million estimate was computed under the scenario whereby, external to the effects of the proposed rule, all of the affected 1,190 airplanes that exist today would continue to fly through the end of the study period, year 2018. In fact, some significant proportion of these costs would never be incurred due to normal rotation and retirement of the affected airplanes. The replacement cycle for the

airplanes subject to this proposal varies widely within the industry. For some mainstream scheduled commuter carriers, it is common practice that airplanes are routinely replaced due to economic practicalities at a stage where few if any of the costs of this proposal would be incurred. Conversely, the economics of some smaller or niche carriers are such that airplanes may continue to fly for 40 years or more. In the absence of more specific projections, the evaluation incorporates the consensus of FAA field engineers associated with this proposal that at least one-third of the potential $142.7 million costs would not be incurred, leaving a projected cost of $95.1 million. The FAA solicits comments on this particular estimate.

Two relatively minor additions are necessary to compute the full expected cost of developing and implementing the inspections and procedures. First, the new inspections and procedures for each airplane model would have to be incorporated into the existing maintenance program of each affected operator. Based on the projected models where full compliance would be feasible, the FAA estimates that there would be 91 unique model/operator combinations whereby the additional inspections and procedures would have to be incorporated. The analysis assumes that this would require 80 hours of work per model/operator combination at a labor rate of $55

per hour, producing an incorporation cost of $440,400. Added to the $95.1 million cost above, this produces a total operator-manufacturer cost of $95.5 million.

As an additional perspective, the total present value cost of the $80,910,897 to all operators is equivalent to a twenty-year, annualized cost stream of $7,637,416, at 7 percent per year.

Similarly, the FAA would incur costs to review and approve: (1) the inspections and procedures for each model, and (2) their incorporation into the existing maintenance programs for each model/operator combination. The costs to review the inspections and procedures documents are estimated at $184,800, consisting of 160 hours of review at $55 per hour for each of the 21 programs to be developed. The costs for review of incorporating these procedures are projected at $200,200, consisting of 40 hours of review at $55 per hour for each of the 91 expected model/operator combinations. Adding these two figures produces a projected cost of $385,000 to the FAA for reviews related to the development and implementation of the inspections and procedures.

Costs of FAA and/or DAR Inspections

The proposed rule would also necessitate that the FAA inspect all airplanes that are, or due to this proposal would be, subject to a damage-tolerance based inspections and procedures requirement to determine their compliance

with the subject programs. These inspections could begin at the start of an airplane's 15th year and would repeat at intervals not to exceed 5 years. Three categories of costs are associated with this provision: (1) the direct costs of the inspectors, (2) the personnel costs incurred by the operator to prepare for the inspections, and (3) the incremental airplane downtime caused by the inspections.

Using the dataset described in the previous section, the FAA estimates that there are 2,850 airplanes age 15 and older that are either currently subject to a inspections and procedures requirement as a result of airworthiness directive or would be as a result of the proposed rule. For the purposes of calculation, the evaluation assumes that this number would remain essentially steady over the study period. Higher or lower forecasts of aging airplane fleet size would have a direct relationship to the cost estimates presented here.

The number of person hours required per inspection was estimated as a function of airplane size, ranging linearly from 24 person hours for an airplane of 50,000 pounds or less, up to a maximum of 120 person hours for airplanes of 200,000 pounds or more. In addition, it was assumed that for every individual hour of actual on-site inspection, an additional one-half hour of ancillary or overhead activity would be required. At a labor rate of $55 per hour, the

direct inspector costs would range between $1,980 and $9,900 per airplane, per inspection, depending on airplane size. These unit costs were multiplied by the count of airplanes in each weight category and were summed to produce a total inspector cost of $18.7 million for the fleet of affected airplanes age 15 and over. Since each airplane must be inspected every five years, the average annual cost would be one-fifth of that total, or $3.7 million.

The proposed rule would specifically empower designated airworthiness representatives (DAR's) to conduct the records reviews and maintenance inspections required under this proposal. Operators who choose to engage a DAR for the necessary reviews and inspections would directly bear the costs of that work. Conversely, operators who choose to rely on FAA inspectors may lose a degree of control over scheduling and availability but would not bear the direct costs of the inspections. In the absence of more specific information, this analysis assumes that one-half of the work would be accomplished by DAR's, and as such, the burden of this expense would be evenly divided between the operators and the FAA.

The second component of these costs concerns the time spent by operator personnel in their preparations to make the aircraft and its associated records available for inspection and review. The evaluation assumes that

operator personnel would expend one-fourth as much time preparing for the inspections as the inspectors would to conduct them (ranging from 6 to 30 hours per airplane inspection, depending on airplane size.) Again assuming a burdened labor rate of $55 per hour, the projected cost of operator personnel would total $3.1 million for all affected airplanes over five years, or $624,000 per year.

The third cost component consists of the incremental airplane downtime necessitated by the additional inspections. Depending on airplane size, the estimated additional downtime is projected to range between approximately .7 and 1.6 days per airplane inspection. Parallel to the downtime cost estimations calculated above for the operator inspections and procedures (7 percent annual value of capital), the analysis projects an economic valuation for these costs ranging from $118 to $2,671 per airplane, per inspection. Multiplying these unit costs by the numbers of airplanes in each size category produces a $3.7 million expense for the affected fleet every five years and an annual expense of $744,000.

The combined cost of the three components for FAA and DAR inspections would total $3,238,218 per year for the operators of affected airplanes, and $1,870,902 per year for the FAA (based on the above assumption that one-half of the inspections would be conducted by DAR’s and borne by the operators.) Over the 20 year study period, these

costs would total $64.8 million ($32.1 million present value) for operators, and $37.4 million ($18.5 million present value) for the FAA.

Combined Costs

The table below summarizes both the standard and present value costs of the proposal. The table shows a combined proposal cost of $198 million with a present value of $99 million.

SUMMARY OF PROJECTED NPRM COSTS

STRAIGHT COSTS	FOR DEVELOPMENT AND IMPLEMENT	FOR FAA/DAR INSPECTION AND REVIEW	TOTAL
TO OPERATORS OF AIRPLANES THAT NEED PROGRAM	$95,524,573	$4,383,547	$99,908,120
AIRPLANES WITH PROGRAM IN PLACE	$0	$60,380,819	$60,380,819
OPERATOR SUBTOTAL	$95,524,573	$64,764,366	$160,288,939
TO THE FAA	$385,000	$37,418,040	$37,803,040
TOTAL	$95,909,573	$102,182,406	**$198,091,979**

PRESENT VALUE COSTS	FOR SIP DEVELOPMENT AND IMPLEMENT	FOR FAA/DAR INSPECTION AND REVIEW	TOTAL
TO OPERATORS OF AIRPLANES THAT NEED PROGRAM	$48,849,466	$2,170,064	$51,019,530
AIRPLANES WITH PROGRAM IN PLACE	$0	$29,891,367	$29,891,367
OPERATOR SUBTOTAL	$48,849,466	$32,061,431	$80,910,897
TO THE FAA	$188,856	$18,523,703	$18,712,559
TOTAL	$49,038,322	$50,585,134	**$99,623,455**

Description of Benefits

The structural properties of materials change as a result of the prolonged and/or repeated application of stress on that material. Fatigue is the term used to describe this inevitable weakening. After some duration of cyclic stress, the material will fail under the applied load because of fatigue. In critical structural elements, this can result in a catastrophic failure of the airplane.

One manifestation of fatigue in materials is cracking. It is not practical to detect fatigue cracks below a certain size. It is possible, however, to initiate inspections at a point in time, and to repeat those inspections at an interval, whereby a crack that can be detected will be detected and repaired before it can grow to a size where the residual strength of the structure is jeopardized.

FAA regulations addressing fatigue have evolved over time. Prior to 1956, airplanes were originally certificated without any specific consideration being given to metal fatigue. Later, airplanes were designed to meet fail-safe criteria with regard to fatigue requirements. "Fail-safe" means that the structure has been evaluated to assure that catastrophic failure of the airplane is not probable after fatigue failure or obvious partial failure of a single, principle structural element. Other airplanes were certificated with design-life limits on the entire airplane or some major structural component

(e.g., wing, empennage, fuselage) under the "safe-life" concept whereby the structure has been evaluated to be able to withstand the repeated loads at the variable magnitudes expected during its service life without detectable cracks. Other airplanes have a form of supplemental inspection procedures specifically aimed at detecting metal fatigue or corrosion but which are derived from service history and the analysis of fleet leader experience rather than damage-tolerance based engineering analysis.

All of the airplanes that would be required to eventually implement damage-tolerance based inspections and procedures under this proposal fall into one of the categories described above. And even where some fatigue related evaluation and assurance was made at the time the airplane was designed and built, those assurances were never intended to be valid after the airplane exceeded the maximum number of flight hours assumed by the designer. Left unchecked, it is not a question of whether the repeated loadings on aircraft will produce a major structural failure, but rather, when. More than 29 percent of the airplanes under this proposal are already 20 years old or older; 14 percent are over 30 years old; and 7 percent of the airplanes are over 40 years old. Under existing procedures, the FAA cannot assure the

continuing airworthiness of these airplanes, and that constitutes an unacceptable risk to air transportation.

The FAA has extensively deliberated on how to mitigate this risk and respond to the Congressional mandate. Technical experts and academic leaders were consulted, and the costs and benefits have been evaluated for numerous alternative approaches. The FAA believes that the damage-tolerance based inspections and procedures in this proposal are the best approach to assure the continued safety of the subject fleet while striking the most cost effective balance of fully responding to the law, minimizing overall costs, and minimizing the impact on small entities.

The purpose of this proposal is to assure the continued structural airworthiness of air carrier aircraft as they continue in service. In this context, the rule does not increase intended safety; instead, it maintains the level of safety established at the time each model's type design was approved by the FAA. In the absence of this or a similar proposal, the FAA would be unable to determine critical aspects of air transportation safety as the affected airplanes age. Absent the ability to make this determination, the agency would be forced to require these aircraft to be retired at some arbitrary age.

There are, then, two principal benefits of the proposal. The first is that the FAA and the industry

would be able to monitor the airworthiness of the affected aircraft as they age, and either take timely corrective action to maintain their continued airworthiness or retire them from service before they become unairworthy. The second benefit is that the aircraft would be able to stay in service longer because their continued airworthiness would be monitored, rather than the aircraft being retired at an arbitrary age.

There are clear safety benefits of this proposal, but it is not possible to reasonably estimate the numbers of accidents that the proposed rule would prevent, primarily because the FAA would take preventive action before an accident pattern due to age emerged.

It is possible, however, to provide a sense of scale by estimating the years of extended service the proposal would have to provide the affected fleet of aircraft to make benefits exceed the related costs. For example, the cost calculations project that it would be economically viable for 927 airplanes to comply with the damage-tolerance based inspection and procedures requirements of the proposal. At the respective times that these requirements would be due, the affected airplanes would have a cumulative estimated value of $649 million[5], with a present value of $321 million. By comparison, the present

value cost of compliance for all of the airplanes subject to the proposed requirement is $51 million. If it is assumed that the average annual value of capital is 7 percent of its worth, then extending the useful life of the subject fleet by one year would be worth 7 percent of $321 million, or $22.5 million (again, present value). Accordingly, the projected costs of this provision would be recovered in 2.27 years of extended useful life ($51 million cost divided by $22.5 million annual benefit = 2.27 years.) Note that the assumed timing of the "counter case" retirement of the affected models would, in turn, change the period necessary to recover the costs. If it is assumed that, in the absence of this proposed rule, no retirement action would have been taken until 5 years after the proposed rule would require SIP development, then the respective value of the subject fleet at that time would be lower ($188 million - present value), causing the annual value of extended useful life to be lower ($13.1 million), and finally requiring more time (3.9 years) to recover costs.

Comparison of Costs and Benefits

The FAA is unable to quantify the expected benefits of the proposal on the basis of historical accident rates that would be reduced. However, the proposed actions are

[5] The cumulative value of $649 million represents the resale value of the subject airplanes. This number was calculated using a regression model that projects the future value of an airplane as a function of its size

necessary to ensure the continuing airworthiness of aging airplanes and the FAA finds that the benefits of the proposed rule would justify its costs.

Initial Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily or disproportionately burdened by Government regulations. The RFA requires a Regulatory Flexibility Analysis if a rule will have a significant economic impact on a substantial number of small entities.

1. A description of the reasons why action by the agency is being considered.

As more fully described in paragraph 2, below, this proposal is required by statute. The agency is considering actions specified in this proposed rule to prevent aviation accidents resulting from structural failure caused by deterioration associated with the aging process.

FAA regulations addressing structural design have evolved over time. Prior to 1956, airplanes were certificated considering the strength of the structure only. No specific consideration was given to metal fatigue. Since 1956, the FAA has incrementally changed its regulations to address fatigue; initially requiring

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and age at that time.

fail-safe or safe-life designs, and currently requiring damage tolerance designs on new transport and commuter airplanes. Damage tolerance represents the most modern approach to continued structural integrity.

"Fail-safe" means that the structure has been evaluated to assure that catastrophic failure of the airplane is not probable after fatigue failure or obvious partial failure of a single principle structural element. Fail safe designs usually consist of redundant (multiple load path) structures that have no set design life limits.

"Safe-life" means that the structure has been evaluated to be able to withstand the repeated loads at the variable magnitudes expected during its service life without the development of critical cracks. Safe life designs usually consist of single load path structure that have an established retirement life on one or more major structural components (e.g., wing, empennage, fuselage).

Certain airplanes rely on supplemental inspection procedures specifically aimed at detecting metal fatigue or corrosion, but which are derived from service history and the analysis of fleet leader experience rather than damage-tolerance based engineering analysis.

All of the airplanes that would be required to eventually implement damage-tolerance based inspections and procedures under this proposal, fall into one of the categories described above. This includes aircraft where

fatigue related evaluations and assurances were made at the time when the airplane was designed and built. Those assurances were never intended to be valid after the airplane exceeded the maximum number of flight hours assumed by the designer. More than 29 percent of the airplanes under this proposal are already 20 years old or older; 14 percent are over 30 years old; and 7 percent of the airplanes are over 40 years old. Under existing regulations, the continuing airworthiness of these airplanes cannot be assured, and that constitutes an unacceptable risk to air transportation.

2. A succinct statement of the objectives of, and legal basis for, the proposed rule.

The objective of the proposed rule is to ensure the continuing airworthiness of aging airplanes operating in air transportation: (1) by applying modern damage-tolerance analysis and inspection techniques to older airplane structures that were certificated before such techniques were available, and (2) through mandatory aging-aircraft records reviews and inspections to be performed by the FAA.

This proposal represents a critical step toward compliance with the Aging Aircraft Safety Act of 1991. In October of 1991, Congress enacted Title IV of Public Law 102-143, the "Aging Aircraft Safety Act of 1991," to

address aging aircraft concerns. The act was subsequently recodified as 49 U.S.C. 44717.

Section 44717 of Title 49 instructs the Administrator to "prescribe regulations that ensure the continuing airworthiness of aging aircraft." The law also requires the Administrator to "make inspections, and review the maintenance and other records, of each aircraft an air carrier uses to provide air transportation." The purpose of these inspections would be to "enable the Administrator to decide whether the aircraft is in safe condition and maintained properly for operation in air transportation." The law specifies that these inspections and reviews must be carried out as part of each aircraft's heavy maintenance check conducted "after the 14th year in which the aircraft has been in service." It also states that the air carrier must "demonstrate to the Administrator, as part of the inspection, that maintenance of the aircraft's age-sensitive parts and components has been adequate and timely enough to ensure the highest degree of safety."

Section 44717 further states that the rule issued by the Administrator must require an air carrier to make its aircraft, as well as any records about the aircraft that the Administrator may require to carry out the review, available for inspection as necessary to comply with the rule. It also states that the Administrator must

establish procedures to be followed for carrying out such an inspection.

3. A description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes or types of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record.

In order for the FAA to fulfill its obligation under 49 U.S.C. 44717, this proposal would require that certain records be made available by the operator. Most of the records that would be required under this proposal are currently required by other regulations. The proposed rule would constitute a minor additional recordkeeping burden for part 135 operators, many of which are small. Airframe flight cycles are not currently required to be collected by operators of small aircraft under part 135. This proposal would require operators to record and maintain flight cycle information on their aircraft. This information is necessary to allow the FAA and the operator to accurately assess the fatigue condition of the airplane.

Under part 135, a total of 209 airplanes would be affected. The FAA estimates that the reporting and recordkeeping requirements would take someone with basic

clerk skills 30 minutes per airplane, per month, at a cost rate of $20.00 per hour These factors translate into an annual recordkeeping cost of $120 per airplane. The projected total annual reporting and recordkeeping burden for all part 135 operators would be $25,080.

4. An identification, to the extent practicable, of all relevant federal rules that may duplicate, overlap, or conflict with the proposed rule.

The FAA is unaware of any federal rules that would duplicate, overlap, or conflict with the proposed rule.

5. A description and an estimate of the number of small entities to which the proposed rule would apply.

The proposed rule would apply to the operators of all airplanes operated under 14 CFR part 121, all U.S.-registered multiengine airplanes operated under 14 CFR part 129, and all multiengine airplanes used in scheduled operations under 14 CFR part 135. Standard industrial classification coding does not precisely coincide with the subsets of operators who could be affected by the proposed rule. Nevertheless, the following distributions of employment size and estimated receipts for all scheduled air transportation firms (SIC Code 4512) are representative of the operators who would be affected by the proposed rule.

EMPLOYMENT CATEGORY	NUMBER OF FIRMS	ESTIMATED RECEIPTS ($1,000's)
0 - 4	153	$193,166
5 - 9	57	$145,131
10 - 19	56	$198,105
20 - 99	107	$1,347,711
100 - 499	74	$3,137,624
500+	73	$112,163,942
TOTALS	520	$117,185,679

Based on existing operator/airplane distributions, the FAA estimates that the proposed rule could eventually affect 226 operators of the subject airplanes. The agency has also estimated the numbers of subject airplanes that each operator uses and has categorized the operators by fleet size.[6]

SUBJECT AIRPLANES OPERATED	COUNT OF OPERATORS
1 to 10	137
11 to 20	34
21 to 30	16
31 to 40	10
41 to 50	7
50 Plus	22
Total	226

[6] Note that the airplanes included here are only those subject to the proposed rule. It is possible that these operators may operate additional airplanes in services not included in the rule; e.g., on-demand, commuter cargo, or single engine.

6. Regulatory Flexibility Cost Analysis

The proposed rule contains two major cost provisions: (1) the development and implementation of new damage-tolerance based inspections and procedures, primarily for smaller airplanes, and (2) the additional FAA physical inspections and records reviews mandated by Congress to assure the continued airworthiness of all aging airplanes. The table below summarizes the derivation of the expected annualized costs per airplane for both provisions based on the categories of airplanes that would be affected.[7]

The table shows that the present value of the estimated cost of the proposal to develop and implement damage-tolerance based inspections and procedures is $48.8 million. Applying this value to the 1,190 affected airplanes produces an average present value cost per airplane of $41,050. As detailed above in the cost methodology section of the regulatory evaluation, the actual costs for any particular airplane may vary from this average cost.

In addition to the total cost per airplane, it is also useful to consider the annualized equivalent of this cost; that is to say, the annual future payments that would be necessary to equal the present value cost of $41,050. Such payments are a function of: (1) the assumed

interest rate, and (2) the time period over which the costs would be borne. This analysis applies a 7 percent interest rate. As for the time period, the proposed rule would require that the supplemental inspection programs be developed between the years 2002 and 2010, depending on the characteristics of the individual airplane. For illustration purposes, this analysis assumes that, on average, the program development costs would be borne over a period of ten years. Based on these two assumptions, the ten-year annualized cost of program development and implementation is estimated at $5,845 per airplane.

In addition to the costs to develop the damage-tolerance based inspection procedures, those airplanes over 15 years old would also be subject to the costs associated with the proposed requirement for additional FAA inspections

and record reviews. Parallel to the methodology described above, the operators of these airplanes would incur an additional present value cost of $3,827 per airplane, and an

annualized cost of $361 per airplane (over the entire 20-

[7] This analysis, like the full regulatory evaluation, assigns all of the costs to develop the damage-tolerance-based inspections and procedures to the operators. It is likely that some of these costs may be borne by the manufacturers of current, major models.

	PRESENT VALUE COST	AIRPLANES	PRESENT VALUE AVERAGE COST	YEARS	ANNUALIZED COST PER AIRPLANE
FOR MODELS THAT NEED INSPEC'S AND PROCEDURES					
DEVELOP AND IMPLEMENT COSTS	$48,849,466	1190	$41,050	10	$5,844.60
FAA/DAR INSPECTION COSTS	$2,170,064	567	$3,827	20	$361.24
FOR MODELS THAT HAVE INSPEC'S AND PROCEDURES					
FAA/DAR INSPECTION COSTS	$29,891,367	2283	$13,093	20	$1,235.89

year study period.)[8]

Finally, the costs of additional FAA inspections and records reviews would also be borne by the operators of those airplanes over 15 years old which already have damage-tolerance based inspections and procedures. The estimated present value of these costs is $29.9 million, distributed over 2,283 airplanes. These factors produce a present value

[8] The costs to develop and implement a damage-tolerance-based program are largely front-loaded. By comparison, the costs of the additional FAA inspections and records reviews would continue relatively evenly over time.

estimated cost per airplane of $13,093, and a 20-year annualized cost of $1,236. The average inspection cost for these airplanes is significantly higher than for those airplanes that would need to have damage-tolerance based inspection programs developed because the airplanes with such programs in place are generally much larger.

Using the three separate cost-per-airplane factors described above, a crosstabulation was performed to determine the counts of airplanes that each existing operator employs by cost impact category; that is to say: (1) whether the airplane currently has or would have to have an inspection program developed, and additionally (2) whether or not the airplane is over 15 years old. While the analysis cannot predict which operators will actually be flying which specific airplanes 10 or 15 years into the future, the methodology described here shows the distributional effects of these costs on the fleet as it is now composed. If the future fleet contains more airplanes over 15 years old, higher costs would be incurred.

The unit annualized costs per airplane for each provision were applied to the dataset of operators and counts of airplanes in each category. The costs were then accumulated to estimate the average annualized impact on each operator. The following table summarizes these computations. Costs are categorized by size of operator,

as defined by the current number of subject airplanes operated.

NUMBER OF AIRPLANES OPERATED	COUNT OF OPERATORS	MINIMUM ANNUALIZED COST	MAXIMUM ANNUALIZED COST	AVERAGE ANNUALIZED COST
1 TO 10	137	$0	$61,697	$13,149
11 TO 20	34	$0	$117,550	$45,159
21 TO 30	16	$0	$185,091	$76,273
31 TO 40	10	$48,924	$201,967	$160,378
41 TO 50	7	$29,223	$146,115	$74,498
50 PLUS	22	$0	$412,030	$149,953
TOTALS	226	$0	$412,030	$44,166

For each category of operators, the table presents the projected minimum, maximum, and average annualized cost per operator. Minimum costs per operator range as low as zero in those cases: (1) where all of an operator's airplanes are models that already have a damage-tolerance based inspection program, and (2) where none of the operator's airplanes is over 14 years old.

As an additional perspective, the annualized equivalent of the $80,910,897 projected total present value cost to all operators is $7,637,416 (at 7% over 20 years.)

Again, it is noted that the cost figures above are based on averages. The actual cost impacts as well as the timing and duration of those costs could vary significantly across individual operators. As explained

elsewhere in this notice, the FAA recognizes that the development of damage-tolerance based inspections and procedures may be technically or economically impracticable for some airplane models.[9]

7. Description of Alternatives

The FAA has considered several alternative approaches to this proposed rulemaking and has attempted to minimize the potential economic impact of the proposal, especially the impact on the operation of aircraft most likely to be used by small entities, while meeting the agency's primary responsibility for aviation safety and its particular obligation under 49 U.S.C. 44717 to ensure the continuing airworthiness of aging aircraft. The primary alternatives of the proposal can be categorized along three broad questions:

- Which aircraft and which aircraft operations should be included in this proposal?
- What compliance timetable should be prescribed in meeting the proposed requirements?
- And, how rigorous should the requirements be?

A. Aircraft Included in the Proposal.

As proposed, this rule would apply to all airplanes

[9] This cost discussion is meant to be responsive to the needs of small business and to the Small Business Administration. Currently the FAA is trying to establish standards for "significant cost".

operated under part 121, all U.S.-registered multiengine airplanes operated under part 129, and all multiengine airplanes used in scheduled operations under part 135. This proposed rule would not cover helicopters, single engine airplanes operated under part 135 or part 129, airplanes used in cargo operations under part 135, or airplanes used in unscheduled (on-demand) operations under part 135. Section 44717 of Title 49 applies to "each aircraft an air carrier uses to provide air transportation." As such, the statute makes no exception for aircraft used by small entity air carriers to provide air transportation. Because this proposal does not include all aircraft described in the statute, the FAA is considering future rulemaking to address the remaining aircraft.

The aircraft and operations omitted from this proposal are not exclusively operated by small entities, but the FAA recognizes that they are more likely to be operated by small entities than, for example, large transport category airplanes in scheduled service. It should be recognized, however, that the problem addressed by Section 44717, the safety of aging aircraft, does not depend on whether the entity operating the aircraft is large or small.

B. Compliance Timetable.

In general, the proposed rule would require that

damage-tolerance based inspections and procedures be developed and implemented within four years of the effective date of the rule. The FAA recognizes that additional compliance time can reduce the burden on small and large entities, and the agency has made every effort to extend the compliance period in those cases where it would be reasonable to do so. Accordingly, compliance under this proposal could be delayed for airplane models with 9 or fewer passenger seats until the year 2010. Airplanes that have an FAA defined design life goal would not be required to have damage-tolerance based inspections and procedures until they had reached their design life goal, or until the year 2010, whichever occurs first. Similarly, compliance could be delayed up until the year 2010 for those models currently required by airworthiness directive to be maintained under a non damage-tolerance based inspection program.

C. Rigor of Requirements.

As noted in Subsection 1, above, FAA regulations addressing structural design have evolved over time. Non damage-tolerance based supplemental inspection programs, based on Advisory Circular 91-60, have been mandated by airworthiness directives for several existing models. Those inspections and procedures address known service experience problems, but they do not anticipate the

possibility of future fatigue cracks that could be predicted through the use of damage-tolerance based principles. Evidence to date suggests that when all critical structures are included, damage-tolerance based inspections and procedures provide the best approach to address aircraft fatigue. As such, this proposal would require that all of the airplanes subject to this rule, including those with existing service based procedures, meet this higher level of assessment and inspection by the year 2010. Obviously, the non damage-tolerance based program would induce lower costs but with a concomitant reduction in safety assurance.

In attempting to strike a permissible balance, it is important to note that this proposed rule would not mandate the most rigorous level of inspection procedures and analysis presently available. The FAA has published a proposed rule for future certifications of transport category airplanes (part 25) that would require the use of "initial flaw" consideration in the damage-tolerance and fatigue evaluation of structure for those airplanes. Under that proposal, the inspection thresholds for certain critical structure would have to be established based on crack growth analyses or tests assuming that the structure contains an initial flaw of the maximum probable size that could exist as a result of either manufacturing or service induced damage. The FAA holds that "initial flaw"

consideration is an appropriate regulatory requirement for newly certificated transport category airplanes. By comparison, the existing aging airplanes under this proposed rule would be better served by addressing "initial flaw" procedures in advisory circular material, thereby maximizing the flexibility of operators to consider the best equivalent means of compliance for their particular airplane models.

8. Compliance Assistance

In its efforts to assist small entities and other affected parties in complying with the proposed rule, the FAA is publishing an advisory circular, "Continued Airworthiness of Older Small Transport and Commuter Airplanes; Establishment of Supplemental Inspection Programs." A notice of availability for this circular will be published concurrently with the proposed rule. This circular will detail acceptable means of compliance with the proposed rule.

In addition, the FAA has undertaken a research program to develop a simplified damage-tolerance based methodology, directly applicable to commuter sized airplanes. The results of this work will be available in the public domain and could be used by small manufacturers or designated engineering representatives (DERs) to aid

their development of the inspections needed to comply with the proposed rule. Again, however, the benefits of a simplified damage-tolerance based methodology for smaller airplanes would be realized by both small and large air carriers.

The estimated cost to the government to develop the generic methodology is $4 million. To date, approximately $2.2 million has been spent and work is expected to be completed in fiscal year 2000. By funding the development of a generic damage tolerance methodology applicable to the entire commuter fleet, the FAA intends to reduce the costs to small entities and other operators subject to the proposed rule. It should be noted that the cost estimates in the economic analysis above reflect the full costs of implementing the proposed rule and do not account for the possible reductions in costs that could be afforded by this research.

Trade Impact Assessment

The proposed rule would not constitute a barrier to international trade, including the export of U.S. goods and services to foreign countries and the import of foreign goods and services into the United States.

International Trade Impact Analysis

The provisions of this proposed rule would not constitute a barrier to international trade, including the export of U.S. goods and services to foreign countries and

the import of foreign goods and services into the United States.

International Compatibility

When this proposal becomes a final rule, the FAA intends to recommend that the ICAO and the JAA consider making similar changes to their recommended practices and requirements.

Unfunded Mandates Reform Act Assessment

Based on these estimates, the FAA does not consider the effects of this proposed rule sufficient to trigger the requirements of the Unfunded Mandates Reform Act or to be a "major" rulemaking for the purposes of the Congressional review requirements under the Small Business Regulatory Enforcement Fairness Act. The FAA requests comments on its cost estimates with respect to those statutes.

Regulations Affecting Intrastate Aviation in Alaska

Section 1205 of the FAA Reauthorization Act of 1996 (110 Stat. 3213)) requires the Administrator, when modifying regulations in 14 CFR in a manner affecting intrastate aviation in Alaska, to consider the extent to which Alaska is not served by transportation modes other than aviation, and to establish such regulatory distinctions as he or she considers appropriate. Because this proposed rule would apply to all airplanes under part

121 and many airplanes under part 135, it could, if adopted, affect intrastate aviation in Alaska. The FAA, therefore, specifically requests comments on whether there is justification for applying the proposed rule differently to intrastate operations in Alaska.

Federalism Implications

The regulations proposed herein will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this proposal would not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

List of Subjects

14 CFR Part 119

Air carriers, Air transportation, Aircraft, Aviation safety, Commuter operations, Reporting and recordkeeping requirements.

14 CFR Part 121

Air carriers, Aircraft, Aviation safety, Reporting and recordkeeping requirements, Safety, Transportation.

14 CFR Part 129

Air carriers, Aircraft, Aviation safety, Reporting and recordkeeping requirements.

14 CFR Part 135

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

14 CFR Part 183

Aircraft, Authority delegations (Government agencies), Reporting and recordkeeping requirements.

THE PROPOSED AMENDMENT

In consideration of the foregoing, the Federal Aviation Administration proposes to amend parts 119, 121, 129, 135, and 183 of Title 14, Code of Federal Regulations (14 CFR parts 119, 121, 129, 135, and 183) as follows:

PART 119-CERTIFICATION: AIR CARRIERS AND COMMERCIAL OPERATORS

1. The authority citation for part 119 continues to read as follows:

Authority: 49 U.S.C. 106(g), 1153, 40101, 40102, 40103, 40113, 44105, 44106, 44111, 44701-44717, 44722, 44901, 44903, 44904, 44906, 44912, 44914, 44936, 44938, 46103, 46105.

2. Section 119.3 is amended by adding the definition of "years in service" after the definition of "When common carriage is not involved or operations not involving common carriage" to read as follows:

§ 119.3 Definitions.

* * *

Years in service means the calendar time elapsed since an airplane was issued its first U.S. or first foreign airworthiness certificate.

PART 121-OPERATING REQUIREMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS

3. The authority citation for part 121 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 40119, 44101, 44701-44702, 44705, 44709-44711, 44713, 44716-44717, 44722, 44901, 44903-44904, 44912, 46105.

4. Section 121.368 is added to read as follows:

§ 121.368 Aging airplane records reviews and inspections.

(a) Applicability. This section identifies the records and requirements necessary for the certificate holder to demonstrate to the Administrator that the maintenance of age-sensitive parts and components of the airplane has been adequate and timely enough to ensure the highest degree of safety. The Administrator reviews these records and conducts the inspections necessary to decide whether an airplane is in safe condition and maintained properly for operation in air transportation.

(b) No certificate holder may operate an airplane under this part after the dates specified herein

unless the Administrator has notified the certificate holder that the Administrator has completed the aging airplane record reviews and inspections.

(1) For an airplane that has exceeded 24 years in service on [*the effective date of the rule*], no later than [*3 years after the effective date of the rule*] and thereafter at intervals not to exceed 5 years.

(2) For an airplane that has exceeded 14 years in service but not 24 years in service on [*the effective date of the rule*], no later than [*5 years after the effective date of the rule*] and thereafter at intervals not to exceed 5 years.

(3) For an airplane that has not exceeded 14 years in service on [*the effective date of the rule*], no later than 5 years after the start of the airplane's 15th year in service and thereafter at intervals not to exceed 5 years.

(c) In the event of an unforeseen scheduling conflict for a specific airplane, the Administrator may approve an extension of up to 90 days beyond a date specified in paragraph (b) of this section.

(d) The certificate holder must make available to the Administrator each airplane for which a records review and inspection is required under this section, in a condition for inspection specified by the Administrator, together with the following records:

(1) Total years in service;

(2) Total flight hours of the airframe;

(3) Total flight cycles of the airframe;

(4) Date of the last records review and inspection required by this section;

(5) Current status of life-limited parts of the airframe;

(6) Time since the last overhaul of all structural components that are required to be overhauled on a specific time basis;

(7) Current inspection status of the airplane, including the time since the last inspection required by the inspection program under which the airplane is maintained; (8) Current status of the following, including the method of compliance:

(i) Airworthiness directives;

(ii) Corrosion Prevention and Control Programs; and

(iii) Inspections and procedures required by § 121.370a.

(9) A list of major structural alterations; and

(10) A report of major structural repairs and the current inspection status for those repairs.

(e) Each certificate holder must notify the Administrator at least 60 days before the date on which the airplane and airplane records will be available for review and inspection.

5. Section 121.370a is added to read as follows:

§ 121.370a Supplemental inspections.

(a) Except as otherwise provided in this section, no certificate holder may operate an airplane under this part after [*4 years after the effective date of the rule*] unless the maintenance program for that airplane includes damage-tolerance-based inspections and procedures.

(b) A certificate holder may operate an airplane listed in appendix M to this part as follows:

(1) If the time in service of the airplane reaches the design-life goal listed in appendix M to this part before [*4 years after the effective date of the rule*], the certificate holder may operate that airplane until [*4 years after the effective date of the rule*]; after that date, the airplane may not be operated unless the maintenance program for that airplane includes damage-tolerance-based inspections and procedures.

(2) If the time in service of the airplane reaches the design-life goal listed in appendix M to this part on or after [*4 years after the effective date of the rule*], the certificate holder may operate that airplane until the date the airplane's time in service reaches the design-life goal or until December 20, 2010, whichever occurs sooner. After that date, the airplane may not be operated unless the maintenance program for that airplane

includes the damage-tolerance-based inspections and procedures.

(c) A certificate holder may operate an airplane for which an airworthiness directive requires the maintenance program to include non-damage-tolerance-based supplemental inspections and procedures until December 20, 2010; after that date, the certificate holder may not operate the airplane unless the maintenance program for that airplane includes damage-tolerance-based inspections and procedures. 6. Appendix N to part 121 is added to read as follows:

APPENDIX N TO PART 121 DESIGN-LIFE GOALS

Airplane Type	Number of Seats	Type Certificate Data Sheet	Design-Life Goal (hrs)
Beech Aircraft Co.			
-Beech 99 (all models)	15+2	A14CE	46,000
-Beech 1900 and 1900C	19+2	A24CE	45,000
-Beech 300 and 300LW	13+2	A24CE	30,000
-Beech B300 and B300C	15+2	A24CE	30,000
-Beech 1900D	19+2	A24CE	45,000
British Aerospace Ltd.			
-BAe Jetstream 3101	19+2	A21EU	30,000
-BAe Jetstream 3201	19+2	A56EU	30,000
De Havilland Aircraft Co.			
-DHC-6	22+2	A9EA	33,000
Dornier GmbH			
-Dornier 228-100 and -200	19+2	A16EU	42,800
-Dornier 228-101			

Airplane Type	Number of Seats	Type Certificate Data Sheet	Design-Life Goal (hrs)
and -201	19+2	A16EU	32,800
-Dornier 228-202	19+2	A16EU	29,600
-Dornier 228-212 (Except SN 155 & 191 and up)	19+2	A16EU	26,400
-Dornier 228-212 (SN 155 and 191 and up)	19+2	A16EU	42,800
Empresa Brasileira de Aeronautica (Embraer)			
Embraer EMB-110	19+2	A21SO	30,000
Fairchild Aircraft Company			
-SA226-TC	20+2	A8SW	35,000
-SA227-AT	14+2	A5SW	35,000
-SA227-TT	9+2	A5SW	35,000
-SA227-AC	20+2	A8SW	35,000
-SA227-PC	20+2	A8SW	35,000
-SA227-BC	20+2	A8SW	35,000
-SA227-CC	19+2	A18SW	35,000
-SA227-DC	19+2	A18SW	35,000
Pilatus Britten-Norman			
PBN BN-2 Mk III (all models)	16+2	A29EU	20,480
Short Brothers Ltd.	39+2	A41EU	57,600
-SD3-30	39+2	A41EU	28,800
-SD3-60	39+2	A41EU	40,000
-SD3-Sherpa			

PART 129 - OPERATIONS: FOREIGN AIR CARRIERS AND FOREIGN OPERATORS OF U.S.-REGISTERED AIRCRAFT ENGAGED IN COMMON CARRIAGE

7. The authority citation for part 129 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40104-40105, 40113, 40119, 44701-44702, 44712, 44716-44717, 44722, 44901-44904, 44906.

8. Section 129.1 is revised to read as follows:

§ 129.1 Applicability.

(a) Except as provided in paragraph (b) of this section, this part prescribes rules governing the operation within the United States of each foreign air carrier holding a permit issued by the Civil Aeronautics Board or the Department of Transportation under 49 U.S.C. 41301 through 41306 (formerly section 402 of the Federal Aviation Act of 1958 (49 U.S.C. App. 1372), as amended), or other appropriate economic or exemption authority issued by the Civil Aeronautics Board or the Department of Transportation.

(b) Sections 129.14, 129.16, and 129.20 also apply to U.S.-registered aircraft operated solely outside the United States in common carriage by a foreign person or foreign air carrier. For the purpose of this part, a foreign person is any person, not a citizen of the United States, who operates a U.S.-registered aircraft in common carriage solely outside the United States.

9. Section 129.16 is added to read as follows:

§ 129.16 Supplemental inspections for U.S.-registered aircraft.

(a) Except as otherwise provided in this section, no foreign air carrier or foreign person may operate a U.S.-registered multiengine airplane initially type certificated with 10 or more passenger seats under this

part after [*4 years after the effective date of this rule*] unless the maintenance program for that airplane includes damage-tolerance-based inspections and procedures.

(b) Except as otherwise provided in this section, no foreign air carrier or foreign person may operate a U.S.-registered multiengine airplane initially type certificated with nine or fewer passenger seats under this part after December 20, 2010, unless the maintenance program for that airplane includes damage-tolerance-based inspections and procedures.

(c) A foreign air carrier or foreign person may operate a U.S.-registered airplane listed in appendix B to this part as follows:

(1) If the time in service of the airplane reaches the design-life goal listed in appendix B to this part before [*4 years after the effective date of the rule*], the foreign air carrier or foreign person may operate that airplane until [*4 years after the effective date of the rule*]; after that date, the airplane may not be operated unless the maintenance program for that airplane includes damage-tolerance-based inspections and procedures.

(2) If the time in service of the airplane reaches the design-life goal listed in appendix B to this part on or after [*4 years after the effective date of the rule*], the foreign air carrier or foreign person may operate that

airplane until the date the time-in-service of the airplane reaches the design-life goal or until December 20, 2010, whichever occurs sooner. After that date, the airplane may not be operated unless the maintenance program for that airplane includes damage-tolerance-based inspections and procedures.

(d) A foreign air carrier or foreign person may operate a U.S.-registered airplane for which an airworthiness directive requires the maintenance program to include non-damage-tolerance-based supplemental inspections and procedures until December 20, 2010. After that date, the foreign air carrier or foreign person may not operate the airplane unless the maintenance program for that airplane includes damage-tolerance-based inspections and procedures.

10. Section 129.33 is added to read as follows:

§ 129.20 Aging airplane records reviews and inspections for U.S.-registered aircraft.

(a) Applicability. This section identifies the records and requirements necessary for a foreign air carrier or foreign person to demonstrate to the Administrator that the maintenance of age-sensitive parts and components of the airplane has been adequate and timely enough to ensure the highest degree of safety. The Administrator reviews these records and conducts the

inspections necessary to decide whether an airplane is in safe condition and maintained properly for operation in air transportation.

(b) After the dates specified herein, no foreign air carrier or foreign person may operate a U.S.-registered airplane under this part unless the Administrator has notified the foreign air carrier or foreign person that the Administrator has completed the aging airplane record reviews and inspections.

(1) For an airplane that has exceeded 24 years in service on [*the effective date of the rule*], no later than [*3 years after the effective date of the rule*], and thereafter at intervals not to exceed 5 years.

(2) For an airplane that has exceeded 14 years in service, but not 24 years in service, on [*the effective date of the rule*], no later than [*5 years after the effective date of the rule*], and thereafter at intervals not to exceed 5 years.

(3) For an airplane that has not exceeded 14 years in service on [*the effective date of the rule*], no later than 5 years after the start of the airplane's 15th year in service and thereafter at intervals not to exceed 5 years.

(c) In the event of an unforeseen scheduling conflict for a specific airplane, the Administrator may approve an

extension of up to 90 days beyond a date specified in paragraph (b) of this section.

(d) The foreign air carrier or foreign person must make available to the Administrator each U.S.-registered airplane for which a records review and inspection is required under this section, in a condition for inspection specified by the Administrator, together with the following records:

(1) Total years in service;

(2) Total flight hours of the airframe;

(3) Total flight cycles of the airframe;

(4) Date of the last records review and inspection required by this section;

(5) Current status of life-limited parts of the airframe;

(6) Time since the last overhaul of all structural components that are required to be overhauled on a specific time basis;

(7) Current inspection status of the airplane, including the time since the last inspection required by the inspection program under which the airplane is maintained;

(8) Current status of the following, including the method of compliance:

(i) Airworthiness directives;

(ii) Corrosion Prevention and Control Programs; and

(iii) Inspections and procedures required by § 121.370a of this Chapter.

(9) A list of major structural alterations; and

(10) A report of major structural repairs and the current inspection status for these repairs.

(e) Each foreign air carrier or foreign person must notify the Administrator at least 60 days before the date on which the airplane and airplane records will be available for inspection and review.

11. Appendix B to part 129 is added to read as follows:

APPENDIX B TO PART 129 - DESIGN-LIFE GOALS

Airplane Type	Number of Seats	Type Certificate Data Sheet	Design-Life Goal (hrs)
Beech Aircraft Co.			
-Beech 99 (all models)	15+2	A14CE	46,000
-Beech 1900 and 1900C	19+2	A24CE	45,000
-Beech 300 and 300LW	13+2	A24CE	30,000
-Beech B300 and B300C	15+2	A24CE	30,000
-Beech 1900D	19+2	A24CE	45,000
British Aerospace Ltd.			
-BAe Jetstream 3101	19+2	A21EU	30,000
-BAe Jetstream 3201	19+2	A56EU	30,000
Cessna Aircraft Co.	8+2	A7CE	12,000
-Cessna 402 Series (all models except 402C)	8+2	A7CE	7,700
-Cessna 402C			
De Havilland Aircraft Co.			
-DHC-6	22+2	A9EA	33,000
Dornier GmbH			
-Dornier 228-100 and -200	19+2	A16EU	42,800
-Dornier 228-101 and -201	19+2	A16EU	32,800
-Dornier 228-202	19+2	A16EU	29,600
-Dornier 228-212 (Except SN 155 & 191 and up)	19+2	A16EU	26,400
-Dornier 228-212 (SN 155 and 191 and up)	19+2	A16EU	42,800
Empresa Brasileira de Aeronautica			

Airplane Type	Number of Seats	Type Certificate Data Sheet	Design-Life Goal (hrs)
(Embraer) Embraer EMB-110	19+2	A21SO	30,000
Fairchild Aircraft Company -SA226-TC -SA227-AT -SA227-TT -SA227-AC -SA227-PC -SA227-BC -SA227-CC -SA227-DC	 20+2 14+2 9+2 20+2 20+2 20+2 19+2 19+2	 A8SW A5SW A5SW A8SW A8SW A8SW A18SW A18SW	 35,000 35,000 35,000 35,000 35,000 35,000 35,000 35,000
Pilatus Britten-Norman PBN BN-2 Mk III (all models)	16+2	A29EU	20,480
Piper Aircraft Co. -PA 31 Navajo -PA 31-300 Navajo -PA 31P Pressurized Navajo -PA 31T Cheyenne and Cheyenne II -PA 31-350 Chieftain and (T-1020) -PA 31-325 Navajo CR -PA 31T2 Cheyenne II XL -PA 31T3 (T-1040) without tip tanks -PA 31T3 (T-1040) with tip tanks	 6+2 6+2 6+2 7+2 9+2 9+2 5+2 9+2 9+2	 A20SO A20SO A8EA A8EA A20SO A20SO A8EA A8EA A8EA	 11,000 15,500 14,000 12,000 13,000 11,000 11,400 17,400 13,800
Short Brothers Ltd. -SD3-30 -SD3-60 -SD3-Sherpa	39+2 39+2 39+2	A41EU A41EU A41EU	57,600 28,800 40,000

PART 135 - OPERATING REQUIREMENTS: COMMUTER AND ON-DEMAND OPERATIONS

12. The authority citation for part 135 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701-44702, 44705, 44709, 44711-44713, 44715-44717, 44722.

13. Section 135.168 is added to read as follows:

§ 135.168 Supplemental inspections.

(a) Except as otherwise provided in this section, no certificate holder may operate a multiengine airplane initially type certificated with 10 or more passenger seats in scheduled operations under this part after [*4 years after the effective date of this rule*], unless the inspection program for that airplane includes damage-tolerance-based inspections and procedures.

(b) Except as otherwise provided in this section, no certificate holder may operate a multiengine airplane initially type certificated with nine or fewer passenger seats in scheduled operation under this part after December 20, 2010, unless the inspection program for that airplane includes damage-tolerance-based inspections and procedures.

(c) A certificate holder may operate an airplane listed in appendix F to this part as follows:

(1) If the time in service of the airplane reaches the design-life goal listed in appendix F to this part before [*4 years after the effective date of the rule*], the

certificate holder may operate that airplane until [*4 years after the effective date of the rule*]; after that date, the airplane may not be operated unless the inspection program for that airplane includes damage-tolerance-based inspections and procedures.

(2) If the time in service of the airplane reaches the design-life goal listed in appendix F to this part on or after [*4 years after the effective date of the rule*], the certificate holder may operate that airplane until the date the time-in-service of the airplane reaches the design-life goal or until December 20, 2010, whichever occurs sooner. After that date, the airplane may not be operated unless the inspection program for that airplane includes damage-tolerance-based inspections and procedures.

(d) A certificate holder may operate an airplane for which an airworthiness directive requires the inspection program to include non-damage-tolerance-based supplemental inspections and procedures until December 20, 2010; after that date, the holder may not operate the airplane unless the inspection program for that airplane includes damage-tolerance-based inspections and procedures.

14. Section 135.422 is added to read as follows:

§ 135.422 Aging airplane records reviews and inspections.

(a) Applicability. This section identifies the records and requirements necessary for the certificate holder operating a multiengine airplane in scheduled operations to demonstrate to the Administrator that the maintenance of age-sensitive parts and components of the airplane has been adequate and timely enough to ensure the highest degree of safety. The Administrator reviews these records and conducts the inspections necessary to decide whether an airplane is in safe condition and maintained properly for operation in air transportation.

(b) After the dates specified herein, no certificate holder may operate a multiengine airplane under this part in scheduled operation unless the Administrator has notified the certificate holder that the Administrator has completed the aging airplane records reviews and inspections.

(1) For an airplane that has exceeded 24 years in service on [*the effective date of the rule*], no later than [*3 years after the effective date of the rule*], and thereafter at intervals not to exceed 5 years.

(2) For an airplane that has exceeded 14 years in service, but not 24 years in service, on [*the effective date of the rule*], no later than [*5 years after the effective date of the rule*], and thereafter at intervals not to exceed 5 years.

(3) For an airplane that has not exceeded 14 years in service on [*the effective date of the rule*], no later than 5 years after the start of the airplane's 15th year in service and thereafter at intervals not to exceed 5 years.

(c) In the event of an unforeseen scheduling conflict for a specific airplane, the Administrator may approve an extension of up to 90 days beyond a date specified in paragraph (b) of this section.

(d) The certificate holder must make available to the Administrator each airplane for which a records review and inspection is required under this section, in a condition for inspection specified by the Administrator, together with the following records:

(1) Total years in service;

(2) Total flight hours of the airframe;

(3) Total flight cycles of the airframe;

(4) Date of the last records review and inspection required by this section;

(5) Current status of life-limited parts of the airframe;

(6) Time since the last overhaul of all structural components that are required to be overhauled on a specific time basis;

(7) Current inspection status of the airplane, including the time since the last inspection required by the

inspection program under which the airplane is maintained;

(8) Current status of the following, including the method of compliance:

(i) Airworthiness directives;

(ii) Corrosion Prevention and Control Programs; and

(iii) Inspections and procedures required by § 135.168.

(9) A list of major structural alterations; and

(10) A report of major structural repairs and the current inspection status for these repairs.

(e) Each certificate holder must notify the Administrator at least 60 days before the date on which the airplane and airplane records will be available for inspection and review.

15. Appendix G to part 135 is added to read as follows:

APPENDIX G TO PART 135 - DESIGN-LIFE GOALS

Airplane Type	Number of Seats	Type Certificate Data Sheet	Design-Life Goal (hrs)
Beech Aircraft Co.			
-Beech 99 (all models)	15+2	A14CE	46,000
-Beech 1900 and 1900C	19+2	A24CE	45,000
-Beech 300 and 300LW	13+2	A24CE	30,000
-Beech B300 and B300C	15+2	A24CE	30,000
-Beech 1900D	19+2	A24CE	45,000
British Aerospace Ltd.			
-BAe Jetstream			

Airplane Type	Number of Seats	Type Certificate Data Sheet	Design-Life Goal (hrs)
3101	19+2	A21EU	30,000
-BAe Jetstream 3201	19+2	A56EU	30,000
Cessna Aircraft Co.			
-Cessna 402 Series (all models except 402C)	8+2	A7CE	12,000
-Cessna 402C	8+2	A7CE	7,700
De Havilland Aircraft Co.			
-DHC-6	22+2	A9EA	33,000
Dornier GmbH			
-Dornier 228-100 and -200	19+2	A16EU	42,800
-Dornier 228-101 and -201	19+2	A16EU	32,800
-Dornier 228-202	19+2	A16EU	29,600
-Dornier 228-212 (Except SN 155 & 191 and up)	19+2	A16EU	26,400
-Dornier 228-212 (SN 155 and 191 and up)	19+2	A16EU	42,800
Empresa Brasileira de Aeronautica (Embraer)			
Embraer EMB-110	19+2	A21SO	30,000
Fairchild Aircraft Company			
-SA226-TC	20+2	A8SW	35,000
-SA227-AT	14+2	A5SW	35,000
-SA227-TT	9+2	A5SW	35,000
-SA227-AC	20+2	A8SW	35,000
-SA227-PC	20+2	A8SW	35,000
-SA227-BC	20+2	A8SW	35,000
-SA227-CC	19+2	A18SW	35,000
-SA227-DC	19+2	A18SW	35,000
Pilatus Britten-Norman			
PBN BN-2 Mk III (all models)	16+2	A29EU	20,480
Piper Aircraft Co.			
-PA 31 Navajo	6+2	A20SO	11,000
-PA 31-300 Navajo	6+2	A20SO	15,500
-PA 31P Pressurized Navajo	6+2	A8EA	14,000

Airplane Type	Number of Seats	Type Certificate Data Sheet	Design-Life Goal (hrs)
-PA 31T Cheyenne and Cheyenne II	7+2	A8EA	12,000
-PA 31-350 Chieftain and (T-1020)	9+2	A20SO	13,000
-PA 31-325 Navajo CR	9+2	A20SO	11,000
-PA 31T2 Cheyenne II XL	5+2	A8EA	11,400
-PA 31T3 (T-1040) without tip tanks	9+2	A8EA	17,400
-PA 31T3 (T-1040) with tip tanks	9+2	A8EA	13,800
Short Brothers Ltd.	39+2	A41EU	57,600
-SD3-30	39+2	A41EU	28,800
-SD3-60	39+2	A41EU	40,000
-SD3-Sherpa			

PART 183 - REPRESENTATIVES OF THE ADMINISTRATOR

16. The authority citation for part 183 continues to read as follows:

Authority: 31 U.S.C. 9701; 49 U.S.C. 106(g), 40113, 44702, 45303.

17. Section 183.33 is amended by revising paragraph (a) to read as follows:

§ 183.33 Designated Airworthiness Representative

* * *

(a) Perform examination, inspection, and testing services necessary to the issuance of, and to determine the continuing effectiveness of certificates, including issuing certificates, as authorized by the Director, Flight Standards Service, in the area of maintenance, or

as authorized by the Director, Aircraft Certification Service, in the areas of manufacturing and engineering.

* * * * *

Issued in Washington, DC, on March 19, 1999

/S/ L Nicholas Lacey
Director, Flight Standards Service